What makes free range chicken “free”:

A case study of the free range chicken sector in the Western Cape

by

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Declaration

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Abstract

Dominant approaches to livestock production are harmful to the environment, human health and animal welfare, yet global meat consumption is rising. Sustainable alternative production approaches are therefore urgently required, and "free range" is the main alternative for chicken meat offered in South Africa. There are, however, no laws that regulate free range chicken production in South Africa, except for non-binding guidelines provided by the South African Poultry Association (SAPA), so it is unclear what this alternative entails and if it is consistently practised. The objective of this exploratory qualitative case study was therefore to investigate who and what determines free range chicken in the Western Cape.

The case study, conducted from a social constructivist worldview, used semi-structured interviews, photographs and document analysis as the data collection methods. 20 interviews were conducted with farmers, chefs, retailers and regulators involved in the free range chicken meat sector in the Western Cape. Data were analysed using thematic analysis, aided by Atlas.ti software for coding, to establish the dominant patterns in the data. The five major themes, selected on prevalence in the case study data and on achieving the research objective, were 1) free range means a bird reared with good animal welfare in mind, 2) free range means quality meat, 3) free range means a profitable business, 4) free range is determined by decision makers or by access to markets, and 5) free range is coupled with concerns about the lack of regulation. Exploring the findings in the context of the literature provided insight into who and what determines when chicken meat is free range in the Western Cape.

The research revealed an absence of formal regulation for free range chicken practices in South Africa as well as a lack of independent private certification. From a social constructionist worldview this means that the term 'free range' is then socially constructed, thus varied and complex. The case study also shows that whether chicken meat is free range is generally determined by those who have access to markets. Large retailers claimed adherence to the Five Freedoms, a set of principles for animal welfare developed in the United Kingdom, used throughout Europe and included in the SAPA Code of Good Practice, which others in the sector say are too broad to be

meaningful. Producers described animal welfare concerns as the main driver for how they practice free range production, that is, providing the birds access to outside space and low stocking densities, yet these interpretations varied. Another driver they listed was a focus on human health, which they achieve mainly through the use of antibiotic-free feed, which resulted in what participants regard as higher quality meat. The producers were also strongly driven by business imperatives, with most stating that free range chicken should carry a higher price than conventionally-reared chicken due to increased production costs.

Recommendations borne from this study focus on the need for further research into this nascent sector. It emerged that a need was to understand consumers' perspectives on what free range chicken production should and should not entail, given that those in the sector claim it had been developed to meet consumer demand. Free range farming was also labelled an improved animal welfare practice, though these views varied, and so it also became apparent that further research would be needed regarding animal welfare in chicken production. Another notable recommendation was that conducting research such as life cycle assessment (LCA) studies would prove valuable in establishing the true sustainability of free range production as an alternative production process. All these recommendations would assist in improving the efficiency of free range production and developing regulation practices, which is currently lacking, to protect the environment, the producers and the consumers.

Opsomming

Oorheersende veeproduksiemetodes is nadelig vir die omgewing, mensegesondheid en dierewelsyn en tog is daar ‘n wêreldwye toename in die verbruik van vleis. Volhoubare alternatiewe vir veeproduksie word dus dringend benodig en “vrylopend” is die mees algemene alternatief vir hoendervleis wat in Suid-Afrika aangebied word. Daar is egter geen wette wat vrylopende hoenderproduksie in Suid-Afrika reguleer nie, behalwe vir nie-bindende riglyne verskaf deur the Suid-Afrikaanse Pluimvee Vereniging (SAPV), so dis nog onduidelik wat presies hierdie alternatief behels, en of die praktyk konstant toegepas word. Die doel van hierdie verkennende, kwalitatiewe gevallestudie is dus om vas te stel wie en wat bepaal vrylopendheid in die Wes-Kaap.

Die gevallestudie, aangepak vanuit ‘n sosiale konstruktiwistiese wêreldbeskouing, het van die volgende metodes van dataversameling gebruik gemaak: semi-gestruktureerde onderhoude, foto’s en dokumnetanalise. 20 onderhoude is gevoer met plaasboere, sjefs en handelaars wie almal betrokke is in die produksie van vrylopende hoendervleis in die Wes-Kaap. Die data is geanaliseer met behulp van Atlas.ti sagteware (vir kodering) om oorheersende patrone in die data te identifiseer.

Die volgende vyf hoof temas is geïdentifiseer op grond van die feit dat dit algemeen voorgekom het in die data en dat dit die navorsingsdoel bereik: 1) vrylopend beteken hoenders wat geteel word met dierewelsyn in gedagte, 2) vrylopend beteken kwaliteitsvleis, 3) vrylopend beteken ‘n besigheid vir profyt, 4) vrylopend word bepaal deur die besluitnemer of toegang tot die mark, 5) vrylopend word gekoppel aan kommer oor die gebrek aan regulering. Die bevindinge, in lig van die literatuurstudie, het gelei tot insigte oor wie en wat in die Wes-Kaap bepaal wanneer iets vrylopend is. Dit blyk uit die navorsing dat in Suid-Afrika daar ‘n gebrek is aan die formele regulering van vrylopende hoenderproduksie asook ‘n gebrek aan onafhanklike private sertifisering. Vanuit ‘n sosiale konstruktiwistiese wêreldbeskouing is die term ‘vrylopend’ dus sosiaal gekonstrueer en dus uiteenlopend en kompleks. Dit beteken dat óf hoendervleis as vrylopend grotendeels afhang van diegene wie toegang het tot die mark. Groot handelaars het beweer dat hulle die Vyf Vryhede nakom – ‘n stel beginsels vir dierewelsyn wat in die Verenigde Koninkryk ontwikkel is en dwarsdeur

Europa gebruik word, en ingesluit is in die SAPV se Kodes vir Goeie Praktyk. Ander in die sektor meen egter dat hierdie beginsels te ruim is om werklik betekenisvol te wees. Produsente het aangevoer dat dierewelsyn hul hoof dryfveer is vir hoe hulle vrylopende produksie implementeer; hier het hulle spesifiek verwys na hoe hulle hoenders toegang gee tot oop spasie waar hulle vryelik kan beweeg asook die feit dat hulle hoenders nie in digbevolkte groepe aangehou word nie. Nietemin was daar uiteenlopende interpretasies van wat dierewelsyn behels. Nog ‘n dryfveer wat aangevoer is is die fokus op mensegesondheid wat hulle hoofsaaklik vermag deur antibiotikum-vrye voer te verskaf, wat volgens die deelnemers ‘n hoër kwaliteit vleis tot gevolg het. Die deelnemers het ook aangevoer dat hulle sin vir besigheid ‘n sterk motiveerder was. Baie het die mening gelig dat vrylopende hoender duurder as konvensioneel geteëlde hoender behoort te wees siende dat eersgenoemde met hoër produksiekostes gepaardgaan.

Voorstelle wat uit die studie gevloei het fokus op die behoefte vir verdere navorsing in hierdie ontluikende sektor. ‘n Behoefte wat geïdentifiseer is is om die opinies en perspektiewe van verbruikers in te win – dis nodig om uit te vind wat behels vrylopende hoender produksie volgens hulle, aangesien diegene wat aktief is in die sektor aanvoer dat hierdie tipe produksie ontwikkel is om in die verbruikers se behoeftes te voorsien. Aangesien vrylopende produksie beskou word as ‘n praktyk wat beter dierewelsyn toepas, ten spyte van die verdeelde perspektiewe hieroor, het dit ook geblyk dat verdere navorsing oor dierewelsyn in terme van hoenderproduksie nodig sou wees. Nog ‘n voorstel was die uitvoer van studies soos lewenssiklusstudies om die ware volhoubaarheid van vrylopende produksie as ‘n alternatiewe produksieproses vas te stel. Al hierdie voorstelle kan bydra tot die bevordering van effektiewe vrylopende produksie en die ontwikkeling van regulasies, waaraan daar tans ‘n gebrek is, om die omgewing, die produsente en ook die verbruikers te beskerm.

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List of Acronyms and Abbreviations

CAPS:	National Curriculum and Assessment Policy Statement
DAFF:	Department of Agriculture, Forestry and Fisheries
EU:	European Union
FAO:	Food and Agriculture Organisation of the United Nations
FAWC:	Farm Animal Welfare Council
FRPFMSA:	Free Range Poultry Farming Manual South Africa
GAIN:	Global Agricultural Information Network
GHG:	greenhouse gasses
GDP:	gross domestic product
IAASTD:	International Assessment of Agricultural Knowledge, Science and Technology for Development
IFOAM:	International Federation of Organic Agriculture Movements
IPCC:	Intergovernmental Panel on Climate Change
IRP:	International Resource Panel
IUDF:	Integrated Urban Development Framework
LCA:	life cycle assessments
UNDESA:	United Nations Department of Economics and Social Affairs
UNFPA:	United Nations Population Fund
USDA:	United States Department of Agriculture
SAPA:	South African Poultry Association
WCED:	United Nations World Commission on Environment and Development
WHO:	World Health Organisation

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Chapter 1: Introduction

1.1. Introduction

This chapter provides an overview of and an introduction to this exploratory case study on the free range chicken meat (broiler) sector in the Western Cape. It starts by providing the background that led to identifying the problem statement and its related research objective. The research objective is to establish *who* or *what* determines whether broiler production in the Western Cape is free range. I then explain the research approach, design and methods chosen to collect and analyse data for this study. I also clarify key concepts that will be used throughout the study and conclude with an explanation of the study's significance, my personal motivations for undertaking it, and a layout of the thesis as a whole.

1.2. Background

Alternative meat production, as conceived here, falls under sustainable development, specifically, sustainable food systems. It is thus fitting to begin this section by briefly illustrating the key concepts associated with sustainable food systems, that is, the contemporary pressures placed on the Earth system, population growth, the second urban transition, the big food transition, the supermarket transition and the nutrition transition (Haysom, 2016).

The continued transgression of the Earth system's (planetary) boundaries in the new geological epoch, the Anthropocene, is essential to take note of and ameliorate in order to meet humanity's development objectives (Steffen, Richardson, Rockström, Cornell, Fetzer, *et al.* 2015; Rockström, Steffen, Noone, Persson, Chapin, *et al.* 2009). Of all collective human activities, the global food system arguably has the most harmful impact on the Earth system (Rockström, Stordalen & Horton, 2016) and is therefore the biggest culprit in transgressing these planetary boundaries. The food system is regarded as one of the largest emitters of greenhouse gasses (GHGs) (Rockström *et al.*, 2016), with land use for agriculture amongst the leading

contributors to climate change and the loss of biodiversity (IRP, 2014). Rearing livestock for meat, eggs and milk, for example, generates and estimate of 14.5 percent of all anthropogenic GHG emissions (Garnett, 2014).

Despite the documented challenges, livestock protein is an important part of a nutritious diet (Havlík, Valin, Herrero, Obersteiner, Schmid, *et al.* 2014; Garnett, 2014; Webster, 2013; Steinfeld, Gerber, Wassenaar, Castel, Rosales, & de Haan, 2006) and the evidence suggests that meat consumption is likely to rise significantly in the coming decades (Rockström *et al.*, 2016; Neeteson-van Niewenhoven, Appleby & Hogarth, 2016; Sans & Combris, 2015; Havlíik *et al.*, 2014; Webster, 2013). This increase is predicated on the shift in diets associated with urbanisation (Sans & Combris, 2015; Puoane, Matwa, Bradley & Hughes, 2006; Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997), which means that such shifts will be especially concentrated in developing countries (Thornton, 2010; Delgado, 2003), since they are rapidly urbanising (Godfray, Crutzen, Haddad, Lawrence, Muir *et al.* 2010; Satterthwaite, McGranahan & Tacoli, 2010). Studies have shown the environmental benefits of vegetarian diets (Beverland, 2014; Sabate and Soret 2014), yet urbanisation and nutrition transition data suggests a rise in the consumption of animal products in the foreseeable future (Sans & Combris, 2015; Puoane, Matwa, Bradley & Hughes, 2006; Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997). If such trends cannot be curbed, it would be valuable to understand how to produce animal protein in a more sustainable manner.

Notwithstanding the health benefit of animal protein consumption, regular consumption of meat, however, has also been associated with negative health outcomes (WHO, 2015). Health concerns related to meat include a risk of antibiotic resistance (Kriel, 2015; Witte, 1998), consumption of hormones injected into animals (Webster, 2013) and unhealthy amounts of fat (Wang, Lehane, Ghebremeskel & Crawford, 2009); concerns all rooted in the method of meat production. Likewise, the industrial meat production methods driven by the Big Food (Stuckler & Nestle, 2012) and supermarket transitions (Weatherspoon & Reardon, 2003), also more broadly theorised as the corporate food regime (Holt-Giménez & Shattuck, 2011; McMichael, 2009), drive some of the unhealthy food production (and social displacement) (McMichael, 2009). Big Food is argued to be the driving force behind a global rise in

consumption of sugar and processed foods (this includes processed meats) that are enriched in salt, sugar and fat, which correlates closely with rising levels of obesity, diabetes and cardiovascular disease (Stuckler & Nestle, 2012). Supermarkets have become the major food supplier in the urban context and, alongside large scale producers, have made processed, convenience foods, and therefore unhealthy foods, cheaper and more easily accessible.

Another concern with regards to meat production is the fact that the present day farmed animal (for food production) is reared intensively (also known as factory farming), which has resulted in poor animal welfare (even cruelty) increasing in scale and form (Cao & White, 2016). This approach to livestock rearing is regarded as a natural outcome of the corporate food regime, since it uses technology to reduce costs (Holt-Giménez & Shattuck, 2011; McMichael, 2009; McMichael, 2005). Animal welfare, which has been gaining international attention since the 1965 Bramwell report[1], an enquiry into intensive livestock production, it therefore forms part of the debate for more sustainable animal protein production methods.

The Earth system pressures along with the human health concerns and poor animal welfare create a predicament that urgently demands alternative, more sustainable meat production approaches (Havlík *et al.*, 2014; Webster, 2013). For meat production approaches to be considered more sustainable, they must consist of practices that consider the Earth system (or environmental system), the social system and the economic system. Although there are many theories and approaches to sustainability, Griggs's (2013) nested system of sustainability (figure 2, chapter 2) resonated with me since it prioritises the environmental system, whilst regarding the other two systems as inextricably embedded within and dependent on the environmental system's stability in the long run. This view stands in contrast to mainstream conceptions that entertain a model of trade-offs (Mebratu, 1998), and treat sustainability as a non-hierarchical, three-pillar model, failing to acknowledge the dependence of all human endeavour on the environment (Griggs, 2013).

[1] The Bramwell report was compiled in the United Kingdom to enquire into the welfare of animals kept under intensive livestock husbandry systems. Recommendations included considerations for improved welfare in intensive livestock production, yet not dismissing the practice as a whole (Bramwell, 1965). More detail on the Bramwell report is provided in section 2.4.2.1.

Poultry reared for meat is the most numerous farmed animal in the world (Meseret, 2016), and is the second highest globally consumed meat, after pork (FAO, 2015). In South Africa broiler production (and consumption) dominates the agricultural sector (DAFF, 2015a). Its alternative is free range chicken (Checkers, 2017; Pick n Pay, 2017, Spar, 2017; Woolworths, 2017), which is available in supermarkets where 97 percent of formal retail food sales in South Africa takes place (Pereira, 2014).

In South Africa free range is not legislated; the Agricultural Products Standards Act 119 of 1990 (Republic of South Africa, 1990) does not allow for production schemes to be regulated, which means that all sustainable productions methods, including organic ones, cannot be regulated by law. The South African Poultry Association (SAPA) does, however, provide guidelines for chicken farmers who wish to produce free range (SAPA 2012). These form part of the SAPA Code of Good Practice and are merely guidelines, not binding legislation, so how the industry is then regulated is not entirely clear.

1.3. Problem statement

Dominant approaches to livestock production are harmful to the environment, human health and animal welfare, yet meat consumption globally and nationally is on a rapid ascent. Sustainable alternative production approaches are thus urgently required. In the category of rising meat consumption, the rise in poultry consumption and production has been the most rapid, warranting specific attention. Within the poultry industry, free range chicken production is the main alternative offered in South Africa. However, there are no laws that regulate free range chicken production in the country, so it is unclear what this alternative entails and whether it is actually more sustainable.

1.4. Research objective

The purpose of the research is to understand how the people that bring free range broiler products to the market interpret the term ‘free range’. The research objective is

therefore to explore *who and what determines whether broiler production is free range.*

1.5. Overview of the research design and methods

I hold a social constructivist worldview (Creswell, 2014; Mouton, 1996; Crotty, 1998) and will use qualitative research methodology to conduct this exploratory study (Denzin & Lincoln, 2005; Mouton, 1996). My research will be predominantly inductive (Creswell, 2014) and I will use a case study design (Stake, 2009; Stake, 2005; Yin, 2005) with semi-structured interviews (Yin, 2011), photographs (Denzin & Lincoln, 2005) and document analysis (Denzin & Lincoln, 2005) as data collection methods. To analyse the data, I will use thematic analysis (Braun & Clarke, 2006) via coding to find patterns or themes in the data (Saldaña, 2009; Friese, 2012). The findings will be classified according to the themes and their respective (sub)categories.

Furthermore, I aim to use purposive sampling (Teddlie & Yu, 2007) within the bounded system (Yin, 2005) of the Western Cape. This means that the participant pool is diversified to ensure the capture of a variety of perspectives. The sample set includes six farmers, four chefs, four retailers and six regulators who participate in bringing free range meat to the market. Due to time and resource constraints, I am unable to include those who consume free range meat. Therefore, this case study will only document the views of the free range providers.

My main data collection method will be semi-structured interviews. It is the most appropriate social constructionist data collection method as it provides access to how people think of or view the world (Bryman & Bell, 2014; Creswell, 2014; Weinberg, 2014). In addition, I will request that the farmers show me around their operation, and whether I may take photographs during the farm visits – based on the reasoning that observing the farm practices may provide better insight than only listening to the farmers' verbal explanations of these practices. The photographs will serve to refresh my memory once I begin analysis, and can be included in the analysis process (see next paragraph). My document analysis will include online content from the

respective participants, such as their websites or blogs, and their free range protocols, if they used or developed any.

The method of analysis to be used is thematic analysis, because the participants are diverse and the context and issues are complex (Braun & Clarke, 2006). I anticipate that the data will consist of narratives about how and why people farm, sell, cook or regulate free range products, and will present a range of socially constructed views. Thematic analysis will be done using Atlas.ti, a computer assisted coding programme, and I will actively decide on themes and categories across data sets (Saldaña, 2009; Braun & Clarke, 2006), determined by prevalence and whether or not the research objective is achieved.

1.6. Key concepts

I detail the following key concepts as reference for this research study.

a) **Broilers:** These are chickens reared specifically for meat production – to differentiate from chickens reared for egg production, which are known as layers (SAPA, 2012).

b) **Conventional farming:** Conventional farming is also known as industrial agriculture. It refers to farming systems that generally include several or all of the following: the use of synthetic chemical fertilisers, pesticides, herbicides, hybrid and/or genetically modified organisms and seeds, water-intensive irrigation, and intensive tillage (Franson, 2017; Kremen, Iles & Bacon, 2012). Conventional farming is also characterised by concentrated animal feeding operations (Franson, 2017; Kremen *et al.*, 2012). Despite the name inferring conservative and established practices, conventional agricultural methods have only been in use since the late 19th Century, and did not become widespread until after the second World War (Franson, 2017; Kremen *et al.*, 2012).

c) **Food system:** A food system encompasses a complex set of interlinked activities, which include all the stages of keeping humanity fed – growing,

harvesting, packing, processing, transforming, marketing, consuming and disposing of food (FAO, 2017b; Pereira, 2014) A broader definition of food systems comprises of the exchanges between and within biogeophysical and human environments, which determine a set of activities - from production through to consumption. The outcomes of these activities aids food security, environmental security, and social welfare (Ericksen, 2008).

d) **Free range:** Broadly, this refers to a system of animal husbandry for food production that allows the farm animals to range freely on natural pasture for a certain amount of time every day (Chait, 2016; Webster, 2013; SAPA, 2012; Van Horne & Achterbosch, 2008). It is also the label used for products made from animals reared in such a way.

e) **Intensive livestock production systems:** Livestock production systems that are referred to as such are basically landless systems. The livestock are housed in built structures and are mechanically fed (Penrith, 2017). Conventional broiler production is an example of intensive livestock production.

f) **Transitions:** Transitions can refer to i) a long-term process, that is, something that happens over one to two generations, thus between 20 to 50 years; or ii) a radical and structural change. Transitions generally contains high levels of complexity and uncertainty (Grin, Rotmans & Schot, 2010).

1.7. Significance of the study

This case study will provide insight into how those in the free range broiler industry in the Western Cape conceptualise and practise free range method. With meat consumption on the rise and with its production occurring in an unsustainable agricultural system within a country (South Africa) that does not, at present, regulate production schemes, the timing and location of this study is significant.

Given the lack of information about the free range industry in South Africa, these findings would be relevant to many parties, particularly regulators in this sector, such

as the Department of Agriculture, Forestry and Fisheries (DAFF), as this study would enable them to better understand how to support the industry. The findings would also be relevant to the independent poultry industry organisation, South African Poultry Association (SAPA), which is the mouthpiece for the industry on economic, political and legal matters. Other industry watchdogs would similarly benefit from these findings, which could be drawn on in their role of keeping industry practices transparent and trustworthy. Lastly, this study would be relevant to free range farmers who want to better understand how others in their industry understand and practise free range farming.

1.8. Personal motivations

As one who holds a social constructivist worldview I do not subscribe to absolute objectivity; I maintain that reality is socially (individually and collectively) constructed. Therefore, I thought it vital to include my personal motivations for pursuing this study, to make the reader aware of my position relative to the topic.

Firstly, I think it is important to share that I consume meat and believe that it has health benefits when moderate amounts of organic, grass fed or free range meats are consumed. This includes meat that is antibiotic and hormone free. I limit the types of meat I consume based on the way in which the animals were raised because I believe that all animals have rights and that even animals bred for human consumption should have a life worth living.

Another reason for limiting the types of meat I consume is related to my health. I have suffered from food allergies since I was ten years old, but was only diagnosed with coeliac disease[2] at the age of 30. I therefore read food labels carefully before making purchasing decisions, since I have learnt (and experienced) that most perceived healthy foods contain preservatives, sugars and gluten and this has resulted in me becoming severely ill. This has led to a complete dislike for mass-produced,

[2] "Celiac disease is an inflammatory disorder of the small intestine caused by an immune response to ingested wheat gluten and similar proteins of rye and barley. It affects at least 1 in 200 individuals, corresponding to roughly three million patients in Western Europe and Northern America alone" (Koning, Schuppan, Cerf- Bensussan & Solid, 2005:373).

processed and unnatural foods, including processed meats. Shortly after my diagnosis my mother was diagnosed with cancer, which prompted further investigation into food production, including the meat sector. This revealed the use of antibiotics and hormones, which have adverse effects on human health. I am also a professionally trained chef and therefore have a keen interest in good food that makes people healthy, instead of ill. Given my observation of the lack of information provided on free range chicken products, I was interested in finding out more about what 'free range' means.

In terms of the popular discourse around sustainability, animal welfare and meat consumption, I have found that it seems to be dominated by either vegans, who reject the value of meat in our diets, or by corporations involved in meat production, who justify the benefits of meat consumption, regardless of its production practices. I hope to contribute a more balanced view through this study.

1.9. Outline of the thesis

This case study is embedded in food systems and sustainability theories – with an emphasis on alternative meat production, and chicken meat in particular – that will be explored in chapter 2, the literature review. The literature review will examine the problematic global state of sustainability, including the mounting influence of large food system transitions and why finding alternative meat production methods is necessary and timely. The literature review will also illustrate key concerns with modern day broiler production, and provide an introduction to free range as an alternative production approach.

Chapter 3 will justify and detail the research approach and methodology.

Chapter 4 will document the research findings, which will be laid out according to the themes selected from the empirical data. The five major themes that have come out of this study are 1) free range means a bird that is reared with good animal welfare in mind, 2) free range means quality meat, 3) free range means profitable business, 4) free range is determined by decision makers or by access to markets, and 5) free range is coupled with concerns about the lack of regulation.

The last chapter, Chapter 5, will unpack the themes from the empirical research and discuss them in light of the literature and the research problem, concluding with recommendations for future research.

Chapter 2: Literature Review

2.1. Introduction

This chapter aims to elucidate and frame the context for this study. It starts by illustrating the key global trends in the food system, beginning with livestock's particularly large impact on the Earth system (Rockström *et al.*, 2016; Steffen *et al.*, 2015; IPCC, 2014; Garnett, 2014; Havlík *et al.*, 2014; Steinfeld *et al.*, 2006), and proceeding with the four major transitions associated with or impacting on the food system (Haysom, 2016). These transitions are i) population growth and the second urban transition (IUDF, 2016; Rockström *et al.,* 2016; Godfray, Beddington, Crutzen, Haddad, Lawrence *et al.* 2012; Swilling & Annecke, 2012; Godfray *et al.*, 2010; Satterthwaite *et al.*, 2010), ii) the Big Food transition (Stuckler & Nestle, 2012) and the corporate food regime (Holt-Giménez & Shattuck, 2011; McMichael, 2009 and 2005), iii) the supermarket transition (Pereira, 2014; Reardon, Timmer & Berdegue, 2004; Weatherspoon & Reardon, 2003), iv) the nutrition transition (Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997) and global health concerns (WHO, 2015; Gómez, Barrett, Raney, Pinstrup-Andersen, Meerman *et al.* 2013; Godfray *et al.,* 2010).

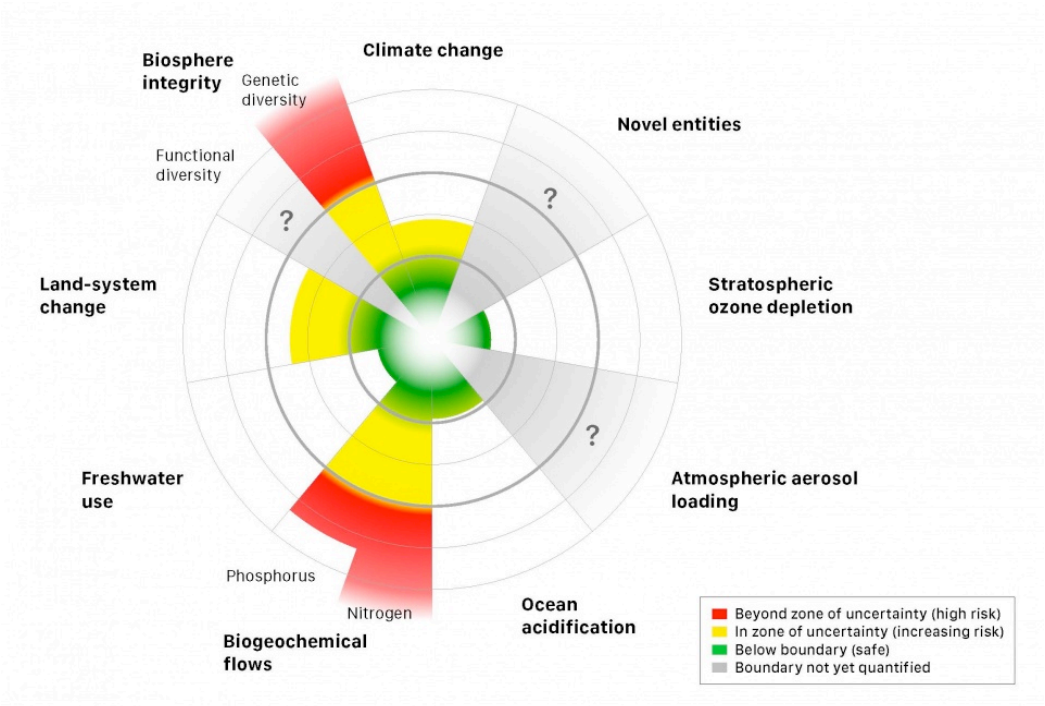
The latter part of this chapter reviews some of the theory and models on sustainability (Griggs, 2013; Hopwood, Mellor & Brein, 2005; Gallopin, 2003; Mebratu, 1998) in order to explore the notion of sustainability and sustainable agriculture (Halberg, 2012; IAASTD, 2009) with particular reference to chicken production, the subject of this study. This chapter concludes by shifting attention to the alternatives offered to conventional broiler (chicken meat) production, with a focus on the free range sector in the South African context, where this research takes place.

2.2. Global trends in the food system

2.2.1. The impact of livestock on the Earth System

The current trajectory of global development is unsustainable and impacts greatly on the Earth system. Mounting research expresses the need for a stable functioning Earth system as a prerequisite for a thriving global society (Steffen *et al.,* 2015; IPCC, 2014; Griggs, 2013; Rockström *et al.*, 2009). Nine planetary boundaries (figure 1), based on the intrinsic biophysical processes, have been proposed to define the safe operating space for humans within this Earth system (Steffen *et al.*, 2015; Rockström *et al.*, 2009).

Figure 1: Nine planetary boundaries



(Steffen *et al.*, 2015:15)

Operating within these boundaries would significantly reduce the risk of driving the Earth system into an inhospitable state (Steffen *et al.*, 2015). The planetary boundaries reported to be in distress are biosphere integrity, biochemical flows, land-system change and climate change (Steffen *et al.*, 2015). For institutions such as the Intergovernmental Panel on Climate Change (IPCC) climate change is considered to

be the primary concern; "Anthropogenic GHG emissions are mainly driven by population size, economic activity, lifestyle, energy use, land use patterns, technology and climate policy" (2014:8). The continued emission of greenhouse gasses (GHG) will cause further warming and long-lasting changes in all components of the climate system, increasing the probability of stark, pervasive and irreversible impacts on people and ecosystems (IPCC, 2014).

Of all collective human activities, the global food system arguably has the most harmful impact on the Earth system (Rockström *et al.*, 2016). The global food system or food systems comprise "a complex set of interlinked activities and outcomes" (Pereira, 2014:4) and can broadly be described as including i) "the interactions between and within bio-geophysical and human environments" (Ericksen, 2008:234); ii) the activities of commodity chains – from agriculture, food processing, transport and selling through to preparation and consumption (Pereira, 2014); and iii) the food systems' "contributions to food security, environmental security, and social welfare" (Ericksen, 2008:234). Participants in food systems include actors from a variety of spheres such as farmers, retailers, consumers and governments (Ericksen, 2008).

The food system is one of the largest emitters of GHGs (Rockström *et al.*, 2016) – varying by world regions (IPCC, 2014) – with land use for agriculture amongst the leading contributors to climate change and the loss of biodiversity (IRP, 2014). Climate change and loss of biodiversity (also known as land-systems change), are two of the planetary boundaries reported to be in distress, (Steffen *et al.*, 2015). The IPCC (2015) supports the notion that activities related to food production are key sources of climate change; these include deforestation and the release of methane and nitrous oxide through agriculture. Tilman *et al.* (2002:671) assert that "agriculture adds globally significant and environmentally detrimental amounts of nitrogen and phosphorus to terrestrial ecosystems, at rates that may triple if past practices are used to achieve [a] doubling in food production" purported to be necessary to feed the growing global population by 2050.

Within the food system, livestock production is one of the main contributors to climate change (Havlík *et al.*, 2014; Steinfeld *et al.*, 2006), deforestation, biodiversity loss and land degradation (Garnett, 2014). Rearing livestock for meat, eggs and milk

generates some 14.5 percent of total GHG emissions (Garnett, 2014). Intensive animal protein production, especially meat production, also requires more natural resources than any other agricultural activity (Herrero, Havlík, Valin, Notenbaert, Ru & Thornton, 2013; FAO cited in Castellini, Boggia, Cortina, Dal, Paolotti *et al.* 2012:). In terms of land use patterns, for instance, livestock utilises 70 percent of agricultural land; this amounts to a third of the globe's arable land (Garnett, 2014). Unsurprisingly, Havlík *et al.* (2014) report that the expansion of the livestock sector is a major driver of land-use change, putting further pressure on one of the most stressed planetary boundaries.

Despite these documented challenges, livestock protein forms an important part of a nutritious diet (Garnett, 2014; Havlík *et al.*, 2014; Webster, 2013; Steinfeld *et al.*, 2006) and the evidence shows that meat consumption is set to rise significantly over the next 13 to 33 years (Neeteson-van Niewenhoven *et al.*, 2016; Rockström *et al.*, 2016; Sans & Combris, 2015; Havlík *et al.*, 2014; Webster, 2013), especially in developing countries (Thornton, 2010; Delgado, 2003), thus urging humanity to find alternative, more sustainable production approaches (Havlík *et al.*, 2014; Webster, 2013).

Besides the environmental pressures that the global food system places on the Earth system, specifically through agricultural livestock production, there are broader food system transitions that are vital to comprehending the developments and complexities of food systems (Haysom, 2016). These transitions are i) population growth and the second urban transition, ii) the Big Food transition, iii) the supermarket transition and iv) the nutrition transition, including global health concerns. These issues are described and unpacked below.

2.2.2. Population growth and the second urban transition

The growing global population, now estimated at 7.5 billion people, and projected at 9 billion people by 2050, continues to put pressure on the food system (Rockström *et al.*, 2016; Godfray *et al.*, 2012). The 21st century is also popularly named the *urban century,* indicating that more people now live in urban areas than in rural areas

(IUDF, 2016). The first major increase in urban populations, and associated changes in social life, known as the first urbanisation wave, took place mostly in North America and Europe and lasted about 200 years from 1750 to 1950. The second urbanisation wave is estimated to take place in the developing world in less than a 100 years from 1950 to 2030 (Swilling & Annecke, 2012). It is predicted that by 2050 the global urban population will constitute 66 percent of the world's total population, amounting to around 5.3 billion people living in cities, a quarter of which are expected to reside in African cities (UN, 2014). In South Africa, for example, "urbanisation … accelerated from 52 [percent] in 1990 to 64 [percent] by 2014, and is expected to rise to 77 [percent] by 2050" (UNDESA, 2014). Continuing population growth in urban areas is associated with rising incomes, a subsequent growth in consumption, and a global increase in the demand for food (Godfray *et al.*, 2010; Satterthwaite *et al.*, 2010).

The growth in population, coupled with rapid urbanisation, which often occurs close to the most intensively cultivated farmland (Gardner, 2016; Swilling, 2016a; Godfray *et al.*, 2010; UNFPA, 2007) or on top of the most fertile soil (Satterthwaite *et al.*, 2010), particularly contributes to food system pressure. Food producers, for example, are experiencing greater competition for land, water and energy (Godfray *et al.*, 2010). "In most instances, there is [also] little effective control over land-use conversions from agriculture[al] to non-agricultural uses" (Satterthwaite *et al.*, 2010:2815), reducing the availability of arable land. In South African cities the de-densification of some cities, also known as urban sprawl, is argued to increase the competition for agricultural land (Swilling, 2016b). Therefore, population growth, and specifically urbanisation where population growth is intensified, is often discussed along with concerns about food security (Swilling, 2016b).

"Food security" according to the 1996 World Food Summit "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996). Urbanisation, in some cases, results in more densely populated living spaces, where little to no food is grown; the supermarket then becomes the core (convenient) supplier of food. In cities access to nutritious food is also sometimes determined by a family's time. As families move to cities and have less time, little to

no access to land, but (in some cases) access to more money, they turn to supermarkets for food as they provide affordable, convenient and easily accessible food (Pereira, 2014; Stuckler & Nestle, 2012; Reardon, Timmer & Berdegue, 2004; Weatherspoon & Reardon, 2003). This tendency to turn to supermarkets ushers in the Big Food and supermarket transitions (Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997).

2.2.3. The Big Food transition and the corporate food regime

Stuckler and Nestle (2012: e1001242) argue that the global food system is ruled by Big Food, which comprises "multinational food and beverage companies with huge and concentrated market power." McMichael (2009) describes the current state of the global food system as the "corporate food regime"[3]. He maintains that it is a project of global development, which "is not about food per se, but about the relations within … food produc[tion] … through which capitalism is produced and reproduced" (McMichael, 2009:281). McMichael (2009:14) further contends that the corporate food regime is "an 'accumulation by dispossession' strategy, operating through mechanisms of structural adjustment in the developing world, which has resulted in the emergence of an agro-industrial food system that is 'environmentally catastrophic'."

Holt-Giménez and Shattuck (2011) argue that the corporate food regime is currently characterised, among many things, by concentrated land ownership. McMichael (2009) argues that this involves a relatively stable set of relationships within a privileged network of corporate agriculture where they accumulate capital on a world scale at the expense of smallholder agriculture and local ecologies. It is also a system where the prices for agricultural commodities are strikingly divorced from their actual

[3] "Food regime analysis – first introduced by Friedmann (1987) and later elaborated by Friedmann and McMichael (1989) – combines political economy, political ecology and historical analysis to explain how particular relations of food production and consumption are central to the functioning and reproduction of global capitalism" (Holt-Giménez & Shattuck, 2011:110). Holt-Giménez and Shattuck (2011) illustrate the development of this through three regimes: 1) 1870–1930 characterised by food and raw materials from the tropical and temperate settler colonies fuelling industrialisation in Europe. 2) 1950–1970 characterised by the Green Revolution, reversing flows from South to North and producing surplus production and thus aid. 3) 1980 to current characterised by a neoliberal phase of capitalism, and expressing a new moment in the political history of capital that is distinct from the previous regime of state-led development anchored in United States hegemony.

costs (McMichael, 2005). Since ownership is centralised by a few powerful elites (Holt-Giménez & Shattuck, 2011) and the real cost of food production is hidden (McMichael, 2005), it makes it difficult to present alternatives since determining the real comparative costs is not possible.

Angus (2008) holds that by the 21st century 60 percent of global food stocks were in corporate hands; six global companies control 80 percent of the global wheat and rice trade, and only three countries produce 70 percent of the globe's corn. Lyson and Raymer (2000) report that in the United States the ten largest food companies control over half of all food sales; they argue that worldwide this proportion is roughly 15 percent and is rising. In South Africa this concentration of corporate control is evident too, with 97 percent of formal food sales controlled by four supermarket groups. Similarly, 75 percent of the South African market share in the animal feed sector is owned by only three companies – Epol, Meadow and AFGRI food (Pereira, 2014).

While much of the corporate food regime, particularly its market concentration and power, is hidden from the general public and consumers' view, consumer's one point of contact with this regime is via the transformations occurring in the retail sector, namely the supermarketisation of food or rather the supermarket transition.

2.2.4. The supermarket transition

Annual global food retail sales are estimated at USD 4 trillion, with supermarkets (including hypermarkets) accounting for the largest share of sales, reported at 51.5 percent in 2007 (USDA, 2017). In South Africa four major supermarket companies account for 97 percent of food sales within the country's formal food retail market; Shoprite Checkers currently controls about 38 percent, followed by Pick n Pay with 31 percent, Spar with 20 percent and Woolworths with 8 percent (Pereira, 2014). It is therefore evident that supermarkets are rapidly becoming the leaders in formal food sales, replacing other traditional sellers.

The rural small-scale food producers have been excluded from the growing supermarket economy as it requires larger volumes, coordination with suppliers,

retailers and intermediaries and is typically more demanding in terms of quality and safety standards (Pereira, 2014; Weatherspoon & Reardon, 2003). Weatherspoon and Reardon (2003) argue that in urban areas, where incomes are higher, supermarkets have taken over the most dynamic segments of the food retail markets. Larger corporations will also buy up land to enable the expansion of supermarkets, emphasising the corporate food regime trend of concentrated land ownership (Holt-Giménez & Shattuck, 2011; McMichael, 2009).

Due to economies of scale in supermarket procurement practices, they are known for being able to offer a greater variety and a lower cost for products than traditional small scale-producers and small scale-retailers (Reardon *et al.*, 2004). The pressure for cheaper costs will typically trickle down to producers, the farmers, the price takers. Reardon *et al.* (2004) argue that a phrase widely used in the retail industry is to 'drive costs out of the system', supporting the notion that food pricing in the corporate food regime is divorced from its real costs. For producers to compete and participate in the supermarket system, they now need agricultural production systems that are more efficient and less labour intensive, implying costly technological upgrades (Reardon *et al.*, 2004).

Urbanisation has also resulted in the entry of women into the workforce. This means that they now have work demands in addition to their more traditional duties of raising children and preparing food. As a result, the demand on women's time has increased, which has in turn developed incentives to shop for convenience and processed foods that will save cooking time (Reardon *et al.*, 2004). Supermarkets, often in combination with large-scale food manufacturers (Big Food), have reduced the prices of processed products, making such alternatives possible (Reardon *et al.*, 2004:169). Reardon *et al.* (2004) found that supermarkets in developing markets generally have a 3 to 1 ratio of processed over fresh foods. In large urban areas in China, for example, the composition of the retail market share is "37 [percent] in fruit and 22 [percent] in vegetables, compared with 79 [percent] in processed goods or 46 [percent in] meat" (Goldman & Banhonacker, cited in Reardon, Timmer & Minten, 2012:12334). The research reveals that supermarkets have changed food production methods, the distribution mechanisms of food and the composition of the final product by introducing access to more processed foods. This supermarket transition,

along with increased access to cheap processed foods, has been implicated in the change in diets globally, a trend that is well-established in the literature, and termed the 'nutrition transition' (Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997).

2.2.5. The nutrition transition and global health concerns

As has already been mentioned, families' food choices shift as they move to cities. They have less time, little to no access to land, yet what they do gain access to is more money and supermarkets. The consequent changes in eating habits are based on lifestyle, access, convenience and status (Sans & Combris, 2015; Puoane *et al.*, 2006; Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997), and is referred to as the nutrition transition[4].

The nutrition transition is characterised by general Westernisation trends, which, in this instance, equate to reduced physical activity and changing diets, shifting away from varied traditional starch based diets towards increased meat and dairy intake (Mathjis, 2015; Johnston, Fanzo & Cogill, 2014; Puoane *et al.*, 2006; IAASTD, 2009), along with an increased intake in saturated fat, sugar and refined foods (Popkin & Gordon-Larsen, 2004). Urbanisation, in most contexts, results in higher household incomes, higher purchasing power, and therefore higher social status, all of which correlate to an increase in processed food and animal protein consumption (Sans & Combris, 2015; Johnston, Fanzo & Cogill, 2014; Godfray *et al.*, 2010; Puoane *et al.*, 2006). Puoane *et al.*'s (2006) study, for example, affirms that people associate meat consumption with high socio-economic standing and therefore abandon traditional foods such as plant and grain based foods; foods which they regard as a sign of

[4] Popkin (1993, 2006) argue that although literature tends to focus on westernisation trends, consumption shifting to an increased sugar, meat and dairy intake, there are in fact five patterns of transition within the nutrition transition: 1) *food collecting in hunter-gatherer societies*, which are diets that consist of high carbohydrates and fibre and low fat, 2) *famine patterns in agricultural communities*, diets based on subsistence farming, 3) *receding famine patterns*, diets influenced by a shift from agricultural to industrial communities, increasing the demand for animal protein and decreasing the consumption of carbohydrates, 4) *degenerative patterns*, which means there's an increase in the service sector and a decrease in physical activity including an increase in fat, sugar and refined carbohydrates and fast foods, and 5) *behavioural change patterns*, diets that decrease fat intake and increase fruits and vegetables intake, based on an awareness of the health implications of diet choices.

backwardness. These shifts are changing the nature of the demand for food and are putting even more pressure on production in the food system (Godfray *et al.*, 2010).

Modern day diets and the change in activity patterns have been strongly associated with the rise of a range of non-communicable, diet-related diseases (Popkin, 2006; Popkin & Gordon-Larsen, 2004). Rockström *et al.* (2016:2364) argue that "unhealthy diets [are] leapfrogging smoking as the leading risk factor for disease globally." One of the foremost global health care concerns, related to diet, is the "triple burden of malnutrition", which refers to the conjoined impact of hunger, micronutrient deficiency and obesity on socio-economics and, more directly, the healthcare system (Gómez *et al.*, 2013). The scale of the problem is vast. An estimated 793 million people globally suffer from chronic hunger (FAO, 2017). Micronutrient deficiencies, also known as hidden hunger, affect over two billion people worldwide, with 161 million children under the age of five regarded as chronically malnourished or stunted (FAO, 2017). Despite the pervasiveness of malnutrition and hunger there are two billion people who are considered overweight or obese (WHO, 2015). Stuckler and Nestle (2012) argue that Big Food is the driving force behind a global rise in consumption of sugar and processed foods that are enriched in salt, sugar and fat; this they found tracks closely with rising levels of obesity, diabetes and cardiovascular disease. The World Health Organisation (WHO) (2015) contends that some of these mentioned contemporary food related health concerns are instead due to trends of high meat consumption, specifically processed meat and red meat.

Despite this latter concern, global protein consumption rose by 31 percent over the last 50 years, from 61g in 1961 to 80g per person per day in 2011 (Sans & Combris, 2015), while the average global meat consumption nearly doubled, rising from 24.2 kilograms per capita per annum in 1964 to 41.3 kilograms per capita per annum in 2015 (FAO, 2015). In South Africa meat consumption is also on a rapid ascent: "In 1994, the average person ate a total of 41 kilograms of meat a year, while 20 years later [in 2014] the average South African [ate] 65 kilograms of meat a year – an increase of about 60 percent over [that] period" (GAIN, 2015:2), a rate higher than the global rate in 2015, which was 41.3 kilograms per capita per annum (FAO, 2015).

In the category of rising meat consumption, the rise in poultry consumption and production has been the most rapid. Within world meat production, poultry's share increased from an estimated 13 percent in the mid-1960s to 28 percent in 2015 (FAO, 2015), and at present chicken is the most numerous farmed animal for meat production (Meseret, 2016). Poultry meat ranks as the second most globally consumed meat, after pork (FAO, 2015) and in South Africa alone 2,049 million tonnes of poultry were consumed in 2014 (SAPA, 2014), with broiler production dominating the poultry sector (DAFF, 2015a). In the same year almost 1 million tonnes of beef were consumed in South Africa (DAFF, 2015b). According to the Department of Agriculture Forestry and Fisheries (DAFF) (2015:6), "The [annual] per capita of broiler (chicken) meat consumed in South Africa has increased from 31.23 kilograms per person in 2005 to 38.50 kilograms per person in 2014."

The unsustainable environmental and human-health consequences of the present food regime, the complicity of soaring global meat production and the particular significance of poultry production within it warrants concerted investigations of potentially more "sustainable" alternatives. However, before reviewing the chicken industry and proposed alternatives, it is important to unpack the notion of 'sustainability', including the various forms of sustainable agriculture.

2.3. Sustainability

2.3.1. Sustainability conceptualised and defined

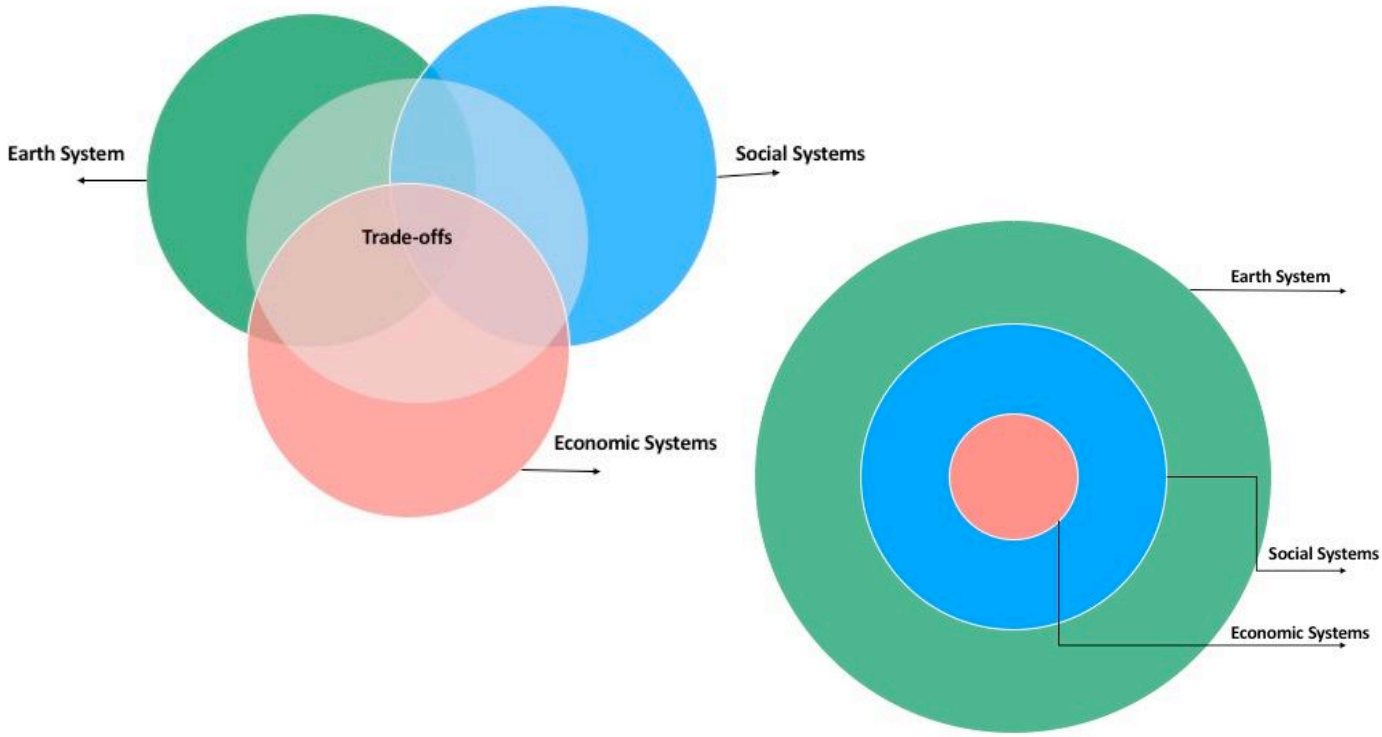
The seminal definition of 'sustainable development' emerged from the World Commission on Environment and Development (WCED), which it defined as meeting the needs of the present generation without compromising the ability of future ones to fulfil their own needs (WCED, 1987). Sustainability, in development terms, is therefore based on a consideration of three interconnected key systems, namely, the environment, economy and society (Mebratu, 1998). This definition, however, has since been hotly contested. The contestation primarily centres on differing interests and worldviews around which system carries the most weight and how these systems should work together. Mebratu (1998), for example, divides the debate into three

views: the institutional, the ideological and the academic view. The institutional view is focused on the satisfaction of needs driven by the institution's objectives, whereas the ideological view focuses on the various social ideologies with a strong focus on leadership (Mebratu, 1998). The academic view, in contrast, is a reflection of the scientific community's conceptualisations and response to the environmental crisis of the 21st century. Hopwood *et al.* (2015) take a different tactic by mapping three approaches to sustainability: the status quo, the reformers and the transformation. All approaches will acknowledge some extent of mounting societal problems, yet the status quo will see little need for change, with the reformers critiquing current institutions and the transformationist approach arguing for fundamental change (Hopwood *et al.*, 2005:45).

The variety of views and approaches have resulted in many models being developed to depict the best way the three systems should interact. In institutional discourse the three systems can be traded off with one another (Mebratu, 1998). The term 'eco-efficiency' has also been birthed within this view. Gallopín (2003), however, contends that strong sustainability requires an imbedded view, naming it a socio-ecological system. This is defined as the societal or human system interacting with the ecological or biophysical system. Gallopín (2003) argues that during this interaction any development that leads to an overall decline of natural capital stocks, especially when it goes below the minimum, fails to be sustainable, notwithstanding the growth of other forms of capital. Griggs (2013:306) simplifies this by explaining the economic, social and the environmental system as a nested concept (figure 2): "the global economy services society, which lies within Earth's life-support system." There are clear parallels between Gallopín (2003) and Griggs' (2013) views of the environment underpinning social and economic development and the 'planetary boundaries' conceptualisation of Rockström et al. (2009). Griggs (2013) redefines 'sustainable development' based on his model as "development that meets the needs of the present while safeguarding Earth's life-support system on which the welfare of current and future generations depends" (Griggs, 2013:306). Griggs's (2013) model suggests a healthy cooperation between the three systems, maintaining the significance of the environment as strongly asserted by Gallopín, whilst acknowledging the importance of the economic system as desired by the institutional view. Although Gallopín (2003) acknowledges the economic system, it is not explicitly depicted in his model, which

could result in a view that the importance of the economic system is undervalued. Such an approach would be difficult to argue in a global neoliberal economy, where countries' successes are often equated with their growth in gross domestic product (GDP).

Figure 2: Sustainability as a nested concept, opposed to trade-offs



(Griggs, 2013)

This nested model can be used to study the sustainability of alternative livestock production methods, particularly chicken meat, which is the focus of this study. Free range chicken is a good example of the three systems working together; economic – free range as a business; social – free range as a community of employees, owners, animals and food; and environmental – free range as an agricultural practice that depends on the Earth system. The sustainability thereof can thus be viewed against this nested system.

2.3.2. Sustainable agriculture conceptualised

Alternative agricultural practices, with a sustainability focus, essentially flow from the definition penned by *Our Common Future*, comprising of the interaction between the three essential components: environment, economics and social sustainability (Halberg, 2012; WCED, 1987), again, understood conceptually as inescapably nested (Griggs, 2013).

According to Halberg (2012) the challenge, however, lies in determining which of the three elements should be prioritised when determining, for example, the sustainability of one agricultural system over another; a similar concern raised by Mebratu's (1998) notion of trade-offs. Halberg (2012) takes a more philosophical approach to understanding sustainable agriculture, referring to research done by Douglas (1984), that distinguishes three nuanced schools of thought. These are 1) agricultural food sufficiency, 2) agricultural stewardship and 3) sustainability as a community (Halberg, 2012). Agricultural food sufficiency views agriculture as an instrument for feeding the world and therefore necessitates the support of technology and resources (Halberg, 2012). Agricultural stewardship regards sustainability as respecting the earth's ecological balances and biophysical limits and therefore shows great concern for the limits to growth in a finite global environment (Halberg, 2012). Sustainability as community shares the aforementioned environmental concerns, but shows greater interest in promoting coherent rural cultures, stewardship, self-reliance, humility and holism (Halberg, 2012). In a sense each of these schools of thought address one of the sustainability systems: *agricultural stewardship* addresses the environmental system, *sustainability as community* addresses the social system, and *agricultural food sufficiency*, one can argue, addresses the economic system, although this latter school of thought has stronger ties to food security in particular. Here again, we see that developing a sustainable approach is difficult since views and interests vary.

A more institutional approach (Mebratu, 1998), as defined by IAASTD (2009), regards sustainable agricultural production as the effective management of an array of interdependent natural and physical resources, including land, water, energy and capital plus the full internalisation of currently externalised costs. The focus on the

'management' of resources for development appears to purely focus on using the Earth system instead of including requirements to replenish it. This speaks to the IAASTD institutional goals: to manage the environmental system in order to meet the needs of people. It does not appear to consider how the environment and people coexist (IAASTD, 2009). This is also a form of agricultural sustainability as food sufficiency (Halberg, 2012). The definition, therefore, clearly considers economic and ecological system factors, but appears to exclude social system factors, unless 'physical resources' are regarded as labour in which case the social is then included. According to the National Research Council (2010) (a United States institution) there are two social factors that specifically require inclusion: 1) to enhance the quality of life for farmers, farm workers and society as a whole and 2) to satisfy human food, feed, and fibre needs as well as contribute to biofuel needs. This second social factor links to meeting food security needs, as defined earlier in this chapter.

Sustainable agriculture, however, is not a single practice; there are different approaches to practising it. Some of these practices are formally known as organic agriculture, agroecology and biodynamic farming. Free range farming appears to be bundled here too (De Boer, Hoogland & Boersema, 2007). Organic agriculture, the most commonly reported sustainable agriculture alternative (IFOAM, 2016), is defined as a production system that sustains the health of soils, ecosystems and people (IFOAM, 2009). Organic agriculture therefore relies on ecological processes, biodiversity and ecosystem cycles that are adapted to local conditions, instead of inputs with adverse effects. IFOAM (2009) maintains that organic agriculture combines tradition, innovation and science to benefit the environment and to promote a good quality of life and fair relationships for everyone involved.

In the European Union organic sales in 2014 totalled 24 billion Euros, over a third of the global sales of organics (IFOAM, 2016). In 2014 the total value of all agricultural production was estimated at 1524,61 trillion Euros per year (FAO, 2014)[5]. The organic sector is evidently minute compared to global food production, yet still noteworthy as an alternative. Other alternatives, such as biodynamics and agroecology, are not reported at a global scale, making comparison difficult; these

[5]This amount is based on a calculation made from FAO (2014) USD 7 million per day, times 5 days, times 52 weeks. It was then converted to Euros based on the currency exchange on 12 September 2017.

are, however, also well-established practices. Biodynamic farming is an approach based on spiritual insights and practical suggestions of Dr Rudolf Steiner, and endeavours to generate health and fertility within farms by creating diversified and balanced farm ecosystems (Biodynamic Association, 2017). Although it is often criticised for being too esoteric, a factor that no doubt has limited its uptake, it is celebrated by those who exercise it as an approach that enlivens the relationship between humans and the earth and that renews the integrity of food, the stability of communities and the wholeness of the earth (Biodynamic Association, 2017). Agroecology is a slightly more recent entrant to the alternative production space, and is far less restrictive than organics and biodynamics in terms of what is not allowed. Instead, it focuses on promoting production systems that are biodiverse, resilient, energetically efficient and socially just (Altieri, 1995).

Since organic agriculture is the most reported on on a global scale, and has the best standards systems, this alternative is explored in more detail here. In particular, the European Union definition and regulatory framework are considered since it is the region with the highest organic sales globally. According to European Union regulations on organic production and labelling of organic products, organic production is described as:

> an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes (European Union, 2007:L 189/1 (1)).

Some of the specific requirements expressed in this legislation, for animal production in particular, are that 1) the feed needs to be organic, 2) the animal should have access to the outside, which includes fresh air pasture to graze, and 3) there should be high regard for animal welfare practices.

Sustainability is evidently diversely viewed, conceptualised and unavoidably linked to three systems – environmental, social and economic – with varied views of their relationships. Within the literature on sustainability there are also diverse perspectives of sustainable agriculture and how it ought to be practised, with each perspective addressing the relationship between the three systems in one way or another. What

sustainable agriculture practices are in terms of chicken production or what is offered as alternatives to conventional chicken production will be reviewed next in section 2.3.3.

2.3.3. Alternatives for chicken production

In chicken meat production the sustainable alternatives generally presented are organic, free range, pasture reared, higher welfare indoor and cage free (Neeteson-van Nieuwenhoven *et al.*, 2016). In the European Union, organic chicken and free range chicken are the leading alternatives for meat production (Neeteson-van Nieuwenhoven *et al*., 2016). Organic poultry, however, is not the leading alternative provided in South Africa, since organic feed is not legislated (Lim Tung, 2016; Kelly & Metelerkamp, 2015) and with 70 to 80 percent of maize produced being genetically modified (Teagle, 2015), acquisition of trustworthy organic feed is difficult and expensive. Cage free poultry is also rarely offered as an alternative meat option, since caging worldwide is generally practised with egg production (Whetstone, 2017). Free range chicken and pasture reared chicken are therefore the leading alternatives offered in the South African market (Free Range Chicken Farming, 2017). Free range chicken is the main alternative available in supermarkets (Checkers, 2017; Pick n Pay, 2017; Spar, 2017; Woolworths, 2017), where 97 percent of formal retail food sales in South Africa take place (Pereira, 2014). According to Meseret (2016), there has also been an increased global interest in free range chicken meat and Vermeulen and Bienabe (2007) document an increase of free range chicken meat availability in South Africa (although they do not indicate over what period nor quantify the increase). In fact, "the demand for free-range products is increasing and … the number of free-range poultry farms has increased significantly," according to the Free Range Poultry Farming Manual for South Africa (FRPFMSA) (2016:1), which was written by people who "are championing a sustainable alternative to poultry production in South Africa through advocacy, commercial linkages [and] practical information to South African poultry farmers" (Free Range Chicken Farming, 2017). With it being the most common chicken meat alternative offered in South Africa, free range chicken will be discussed in the next section of this review.

2.4. Sustainable chicken production

This section reviews one of the alternatives to conventional chicken meat production, free range production, with a specific focus on the South African industry. In order to better understand what inspired the development of alternatives like free range chicken production, and the benefits thereof, conventional broiler production will be reviewed first. The following section will then give an overview of free range chicken production, starting with the historical development of this approach and then looking at the regulations and standards that exist to govern this industry both globally and in South Africa. Finally, the last section will apply the conceptualisation of sustainability, as was previously outlined in section 2.3, to the free range chicken production system.

2.4.1. Conventional broiler production

Poultry farmed for meat and eggs are known to be kept more intensively than any other animals in agricultural production and it has been reported that the sector practises poor animal welfare (Duncan, 2001). According to Cao and White (2016:2), "animal cruelty is increasing in terms of scale and in more varied forms." Factory farming, which they argue originated in the West, has now been introduced to developing countries and is expanding rapidly (Cao & White, 2016). This approach to livestock rearing is a natural outcome of the corporate food regime as it uses economies of scale and technology to reduce costs (for example, through lower labour intensive production) (Holt-Giménez & Shattuck, 2011; McMichael, 2009; McMichael, 2005).

A review of the literature revealed six commonly raised issues relating to conventional broiler production: high stocking densities, fast-growing breeds, transport, antibiotic dependence, labour health concerns and emissions from manure. These are discussed below:

Stocking densities: Birds in commercial breeding are known to be densely stocked resulting in adverse behaviours. When in confined spaces, birds find it challenging to

express their normal behaviour, leading to frustration and resulting in rebellious behaviour (Duncan, 2001). Examples of this include aggressive feather pecking (sometimes even leading to cannibalism), resulting in injured birds and damaged meat. Miao, Glatz and Ru (2004) however, share a Dutch survey of organic chicken production, which indicates that feather pecking is related to population size and the presence of males, and is not necessarily only a condition of stocking density. In some contexts, elective surgeries are reported, also regarded by some as mutilations, such as beak trimming or de-beaking, in an attempt to address or prevent some of this aggressive behaviour (Meseret, 2016; Miao *et al.*, 2004; Duncan, 2001). The removal of males' two inside toes with a hot blade is a common practice aimed at ensuring the hens are not damaged when the males mount them in adulthood (Duncan, 2001).

Animal Voice SA (2016) argues that high stocking densities result in little movement and thus a high level of ammonia build up, which leads to ulcerative footpad lesions; this is a result of chickens standing on the same faeces-saturated, ammonia-laden litter for their entire lifespan of 38 to 42 days.

Fast growing breeds: Another feature of intensive livestock production includes the use of fast-growing breeds as a cost-reducing measure. Faster growing breeds seem to be a greater focus in the European Union with much written about the 'plofkip'; "the plofkip has been created by years of breeding faster growing breeds"[6] (Wakkerdier, 2017), and literally translated means exploded chicken. The Ross or Cobbs breeds typically used have a lifespan of just 42 days, "in which time they reach a slaughter weight of at least two kilograms" (Neilson, 2016). Neilson (2016) says this unnaturally speedy growth, where chickens gain at least 50 grams a day, is what earned them their graphic nickname. Fast growing breeds result in animal welfare concerns as they are reported to have issues around poorly developed bones, and overgrown flesh that is poorly supported by organs, known as Ascites (Meseret, 2016;

[6] "De plofkip is ontstaan door jarenlang doorfokken op steeds goedkoper vlees. In zes weken tijd wordt een kuikentje van 50 gram vetgemest tot een vleeshomp van ruim twee kilo. Hoewel steeds minder supermarkten plofkip verkopen, is Nederland nog lang niet plofkipvrij. Wij gaan door met onze campagne totdat heel Nederland gestopt is met dit dierenleed" (Wakkerdier, 2017). Translated: The plofkip has been created by years of breeding cheaper meat. In six weeks' time a 50 gram chicken will be fed to a meat pump of over two kilos. Although fewer supermarkets sell plofkip, the Netherlands is still not plofkip free. We continue our campaign until the whole of the Netherlands has stopped this animal cruelty.

Duncan, 2001). Studies suggest that there are also human health concerns associated with the fast growing breeds since these birds tend to be higher in fat (Wang *et al.*, 2009).

Animal welfare activists, such as Animal Voice SA, call these faster growing breeds 'baby Frankensteins', and highlight that their overgrown bodies lead to respiratory disease, heart and lung failure (Animal Voice SA, 2016).

Transport: Duncan (2001) maintains that of all the things done to farmed animals, what happens 24 hours before they are slaughtered reduces their welfare the most. "Birds [are] often injured during catching and crating, frightened by novel stimuli, stressed by disruptions to their social and physical environment throughout the catching and transportation process and [are] subjected to climatic extremes during transportation" (Duncan, 2001:216). In Israel alone one million birds die annually in the transportation process (Wolfson, 2016). Water-bath stunning has been practised for half a century to increase the bird's welfare before slaughter, yet Duncan (cited in Duncan, 2001:217) argues that this is neither very efficient nor humane.

Antibiotic dependence: Conventional broilers are routinely given antibiotics in their feed (Webster, 2013; Witte, 1998). The purpose of antibiotics use in animal husbandry is growth promotion – animals that receive antibiotics in their feed tend to gain 4 to 5 percent more body weight than animals that do not receive antibiotics (Witte, 1998). "The term 'Growth Promoter' has been used for years to describe the use of subtherapeutic levels of antibiotics to improve growth performance" (Ferket, 2004:58), which Ferket (2004) argues is an inappropriate term since it is confused with the use of growth hormones or estrogen-like compounds, which are anabolic hormones used in swine and cattle industries. Antibiotics are used to ensure that the confined animal remains disease free and therefore grows quicker; Ferket (2004) therefore argues they should be called 'Growth Permitters' instead.

Research has found that antibiotic use in animals leads to antibiotic resistance in humans: "Antibiotics use in animals … has resulted in resistance among nontyphoid Salmonella serovars. The resistant bacteria are transmitted to humans in food or through contact with animals" (Witte, 1998:996). Antibiotic resistance, a leading

argument for healthier chicken meat, has been a focus since 1969, when "the Swann Committee of the United Kingdom concluded that antibiotics used in human chemotherapy or those that promote cross resistance should not be used as growth promoters in animals" (Witte, 1998:996). The WHO (1997) research on the medical impact of the use of antimicrobial drugs in food animals reinforced the recommendations of the Swann committee. Since the WHO findings, there has been continuous debate about the extent to which bacterial antibiotics can be used in food animals (Witte, 1998). Phillips, Casewell, Cox, Friis, Jones *et al.* (2004:28) for example, say that the actual danger of antibiotics given to farm animals for both humans and animals are small, arguing that: "resistant bacteria can contaminate animal-derived food, but adequate cooking destroys them".

Labour health: Castellini *et al.* (2012) used the World Bank *Environmental, Health, and Safety Guidelines of Poultry Processing* to assess labour health effects of various production systems. They found that in conventional poultry buildings, the air usually contains significant levels of dust, toxic gases (ammonia and hydrogen sulphide) and chemicals (Castellini *et al.* 2012). The latter is due to disinfection that needs to take place at the end of each chicken breeding cycle. Castellini *et al.* (2012) maintain that this is not ideal for labour health. None of the other papers I reviewed provided commentary on labour health.

Emissions from manure: The increased demand for poultry products has led to rapid and concentrated growth in poultry production, causing excessive manure supplies (Moore, Daniel, Sharpley & Wood, 1995). According to the FAO (2014) GHG emissions associated with chicken manure storage, removal and processing are significant: 11 percent of the poultry industry's total global GHG emissions, which amounts to 8 percent of the whole livestock sector or the equivalent of 606 million tonnes of carbon dioxide. Despite poultry manure being one of the best organic fertilisers, excessive land application rates can lead to nitrate leakage into groundwater, phosphorus runoff into adjacent water bodies, and the triggering of elevated bacterial or viral pathogen levels in lakes and rivers (Moore *et al.*, 1995; IAASTD, 2009).

There are clearly significant environmental and social (animal welfare and human health) issues associated with conventional broiler production. Despite these concerns, the demand for chicken is on the rise (Narrod, Tiongco & Costales, 2007; FAO, 2015), with the FAO (2015) reporting that global annual poultry meat consumption has increased from 10.2 kilograms per person between 1997 and 1999 to 13.8 kilograms in 2015, and is projected to increase to 17.2 kilograms in 2030. According to Narrod *et al.*, (2007:2), "it is estimated that production and consumption of poultry meat in developing countries will increase by 3.6 percent and 3.5 percent, respectively, per annum from 2005 to 2030." This is linked to several factors that this literature review has aimed to identify and better understand. Animal protein consumption and its negative effects on the environment, human health and animal welfare demand attention – humanity needs to reduce meat consumption and/or find alternative ways to produce animal protein. Based on evidence that meat consumption, particularly chicken, continues to rise, it is pertinent to explore alternative production methods for chicken meat.

2.4.2. Free range chicken production

2.4.2.1. An overview

Free range farming refers to food produced from animals that have had access to outdoor space, allowing them to graze and forage for food outside (Chait, 2016; Van Horne & Achterbosch, 2008). Rearing chickens started as a domestic practice. The views on the arrival and the route the species took are divided among scholars (Mwacharo, 2013). According to Mwacharo (2013), although domestic chickens are an abundant specie on the African continent (the red junglefowl), they are originally from Asia. Mwacharo (2013) says that scholars are, however, divided as to when exactly they arrived on the continent. In South Africa, the poultry industry evolved over the years, starting as a backyard industry, with thousands of households keeping small flocks of birds and only a limited number of large producers (SAPA, 2014). This has changed since the early 1900s when "a trend emerged of more formal enterprises with modern production processes underpinned by sound commercial

practices" (SAPA, 2014:6). Today the South African chicken industry has grown into a mature, efficient and highly productive commercial operation (SAPA, 2014).

The history of free range appears to be under reported, since there is a lack of data available. It appears to be a practice driven by the need to go back to the traditional way of rearing birds (Chicken farming, Free range chicken, 2017[7]) and an attempt to address the ills of conventional broiler production (FRPFMSA, 2016), with a specific focus on animal welfare (Neeteson-van Nieuwenhoven *et al.*, 2016; Miao *et al.*, 2004). Looking at the history of the legislation of animal welfare can also provide some historical context for the rise of this alternative farm animal rearing method. The history of the Five Freedoms (table 1, page 35) also provides context for the history of formalising animal welfare. In short, animal welfare became a legislative issue in the late 1960s, with free range, according to the Google Ngram search (figure 3), being written about from the early 1980s. Much of this writing appears to be guidelines for starting free range practices at home.

Figure 3: Google Ngram search: Free range chicken

[7] Google Ngram is a statistical analysis tool of text or speech content that Google Books has scanned in from public libraries to populate their Google Books search engine. Although this is an imperfect tool, it helps to give an indication of what appears in books across the globe, and when particular topics emerged and/or became popular. Due to the limited writing on the history of free range chicken, this search helped to give a sense of when authors started writing about it.

The history of animal welfare legislation is traced back to the United Kingdom where the Bramwell report was released in 1965, addressing issues related to intensive animal farming (FAWC, 2009). It is argued that this was in response to concerns raised in the 1964 book *Animal Machines* by Ruth Harrison (Fordyce, 2017). The Bramwell report produced considerable recommendations for the welfare of livestock (the domestic fowl, pigs, cattle, sheep, turkeys, ducks and rabbits). Despite acknowledging the difficulty in providing a precise definition of the term 'intensive livestock husbandry', it made clear that "these methods result in the rapid production of animal products by standardised methods involving economy of land and labour" (Bramwell, 1965:2) According to Farm Animal Welfare Council (FAWC, 2009), since then significant advances have been made in the field of animal welfare, specifically in terms of developing the Five Freedoms. Current legislation in the United Kingdom on the minimum standard of welfare is based on the avoidance of unnecessary suffering and the provision of needs. The Five Freedoms also concentrate on suffering and needs.

The European Union has adopted the Five Freedoms (Webster, 2013), and subsequently taken it further, since the Treaty of Amsterdam in 1997, by classifying farm animals not as commodities but as sentient beings (Webster, 2013). Webster (2013) argues that this has generated a new basis for legislation, recognising that animals' feelings are as important as feed, water and shelter. Webster (2013) argues that good application of the Five Freedoms requires consideration of the accompanying Five Provisions (table 1), a brief description of the husbandry resources and management practices required to promote each principle of good welfare.

These provisions are also relatively broad and lack specification for animal specific needs. Chickens, for example, would need an environment where they can dust bathe and would need access to insects as part of their natural diet and tree structures for the purposes of shade and protection (FRPFMSA, 2016). This could form part of the fifth freedom, yet this is very much open to interpretation. Another example is the third freedom, where treatment could mean antibiotic use. There is also no mention of breed types, growth promoter use, stocking densities and animal transport, for

example – all of which represent the problematic areas of conventional chicken production discussed above.

Table 1: Five Freedoms

Freedom	Provision
1. Freedom from thirst, hunger and malnutrition	by ready access to fresh water and a diet to maintain full health and vigour.
2. Freedom from discomfort	by providing a suitable environment, including shelter and a comfortable resting area.
3. Freedom from pain, injury and disease	by prevention or rapid diagnosis and treatment.
4. Freedom from fear and distress	by ensuring conditions that avoid mental suffering.
5. Freedom to express normal behaviour	by providing sufficient space, proper facilities and company of the animal's own kind.

In South Africa free range chicken production is under reported. Eikenhof, a farm in Elgin Valley, Grabouw, reports to have had free range hens for egg production as part of a mixed farming method since the early 1900s (Free range chicken company, 2017). Elgin free range chicken, a meat producer, appears to be the best known and potentially the first commercial free range-only producers in South Africa, established in 2000 (Erasmus, 2010).

Today there is no internationally agreed upon minimum requirement or standard for free range broilers and it appears to be interpreted differently in different contexts. In keeping with the European Union as leaders in organic production and animal welfare, respectively, I share their guidelines (as it is not yet legislated there) for free range chicken production. These include 1) rearing slower growing breeds, 2) providing access to the outdoors, 3) providing environmental enrichment such as straw bales, perches and low barriers to increase activity and welfare in sheds, 4) adhering to low stocking densities, and 5) ensuring shorter transport to and waiting times at slaughter (Stevenson, 2012; Van Horne & Achterbosch, 2008; Turner, Garces & Smith, 2005). According to Stevenson (2012) the term 'free range' in practice also means that range hens must not only have access to outdoor runs but must also have indoor housing in the evening.

FRPFMSA (2016) describes free range chicken as "birds that are raised in a stress-free environment where they are not crowded, have a natural diet of grains, forage, and bugs and have plenty of fresh air and sunlight" (FRPFMSA, 2016:1). The South African Poultry Association (SAPA) says free range refers to the Five Freedoms including the following guidelines: 1) birds should not be stocked at more than five birds per square meter, 2) there needs to be minimum of 50 percent living vegetation present at all times, 3) external shade of four square metres per 1 000 birds is required by means of either trees or artificial structures, 4) provision must be made for outside cover to reduce stress reactions from overhead predators, 5) fencing must be adequate to protect birds from terrestrial predators, 6) birds must have access to the external range for a minimum of six hours a day during natural daylight, and 7) access to external range should be provided by means of doors, gates or pop holes – pop holes should be at least 35 centimetres high and 40 centimetres wide with an allowance for at least two metres per 1000 birds, and lastly, 8) birds can never, at any stage of their life, be allowed in a cage (SAPA, 2012).

Besides these SAPA guidelines, there are no legislated free range regulations in place in South Africa and therefore it cannot be enforced by law. The Agricultural Products Standards Act 119 of 1990 (Republic of South Africa, 1990) does not allow for production schemes to be regulated, which means that all sustainable production methods, including organic, cannot be regulated by law. Consumers can therefore only rely on private certification schemes. There are, however, no independent private certification schemes for free range chicken in South Africa (Free Range Chicken Farming, 2017). Retailers who sell free range products claim to use independent auditors as means of regulation and consumer assurance (Free Range Chicken Farming, 2017; Child, 2014). In South Africa, animal cruelty is regulated by law, and welfare is safeguarded by Non-Governmental Organisations (NGOs) such as the Society for the Prevention of Cruelty to Animals (SPCA) and by animal welfare advocates such as Animal Voice, which forms part of the international organisation Compassion in World Farming. The Animal Protection Act 71 of 1962 (Republic of South Africa, 1962) makes provision for the protection of farmed animals for food production; it is essential to note that provision is made for animal cruelty and not for welfare (Lovell, 2017).

In order to assess if free range chicken production is a truly sustainable alternative, the next section will map the literature against Griggs' (2013) nested sustainability framework (figure 2, page 23), supported by views of sustainability provided by Mebratu (1998) and Hopwood *et al.* (2005).

2.4.2.2. Conceptualising sustainability for free range

2.4.2.2.1. Environmental sustainability

Environmental sustainability, when viewed on its own, is essentially about living and producing within the planetary boundaries to ensure a healthy and stable earth system. The FAO's (2014) guidelines for assessing GHG emissions and fossil energy use from poultry supply chains maintain that it is complex to measure the environmental impact of poultry production. Bearing this in mind, I have studied the aforementioned FAO guidelines including peer reviewed academic papers using methods such as life cycle assessments (LCA) to get a sense of the environmental impact of the poultry industry, specifically considering the alternative, free range production (the FAO makes no mention of free range production in its guidelines for assessing GHG emissions and fossil energy use from poultry supply chains). I also studied literature on sustainable poultry production in general. Mulder (2016) argues that indicators for more environmentally sustainable approaches include land use, water use, organic feed production and transport– factors admittedly all rather complex to measure (FAO, 2014). Leinonen, Williams, Wiseman, Guy and Kyriazakis' (2013) LCA studies prove that emissions from housing and manure also need to be considered.

Compared to other meats, Ellis and Kempsey (2016) describes chicken as more environmentally efficient and according to Mulder (2016), poultry production benefits from very competitive costs of production whilst being efficient. In the LCA studies done by De Vries and de Boer (2010), they found that the production of 1 kilogram of chicken protein had the lowest environmental impact as opposed to beef protein that had the highest. Chicken uses less land, requires less fossil fuel and energy and produces the least greenhouse gas emissions (CO_2).

Feed, according to the FAO (2016:17), "represents a major [environmental] component of poultry supply chains." Nijdam, Rood and Westhoek (2012) argue that the longer life spans of free range and organic chickens imply more feed (assuming fresh vegetation is not available), and would therefore imply a higher demand on the environment. Castellini *et al.* (2012) found that organic systems spent 20 percent more on feed than conventional systems, thus has a greater impact on the environment. Despite these allegedly more sustainable chicken production systems using more feed, the extra feed required is far less of a concern than it would be in beef and pork farming (Nijdam *et al.*, 2012). Leinonen *et al.* (2013) argue that the impact of feed needs to be considered in the chicken's diet as a whole, not just as the replacement of one ingredient with another. European Union law and the SAPA free range guidelines are not specific about the type of feed required for free range chickens or where the feed should come from, although SAPA (2012) does indicate the need for a minimum of 50 percent living vegetation to be present at all times.

Nijdam *et al.*, (2012) found that poultry, compared with other types of meat, generally have a smaller environmental impact, in terms of both GHG emissions and land use. The definitions and SAPA guidelines for free range, however, are explicit about increased space and access to the outside (grass, fresh air and sunlight) as a rearing prerequisite. As a result, farmers would need more land.

FRPFMSA (2016:19) stresses that "water is critical for healthy, productive birds" and SAPA (2012) includes drinking water in their guidelines. Due to the longer breeding times of free range chicken we can safely assume more water is also required.

Transportation includes the distribution of day old chicks, feed transportation, on the farm transportation, taking the broilers to the abattoir and getting the produce into the market. The majority of such transport is fossil fuel dependent (Marsden & Morsley, 2014; Leinonen *et al.*, 2013). I have found no data stating that the transport of free range chickens is different to that of commercial chickens and therefore cannot comment on whether or not the transport of free range chickens is more environmentally sustainable.

2.4.2.2.2. Social sustainability

Hopwood *et al.* (2005) maintain that a transformationist view of sustainable development necessitates a strong commitment to social equity with an understanding that access to livelihoods, good health, resources and economic and political decision making are connected. They maintain that when people don't have control over their lives and resources, it can lead to inequality and environmental degradation. Based on the social indicators highlighted by Hopwood *et al.* (2005) I share some data on the current state of the social system in South Africa, keeping in mind that the focus is agriculture.

According to the National Development Plan, agriculture delivers more jobs per Rand invested than any other sector, and could potentially create one million jobs by 2030 (DAFF, 2016). The chicken industry creates 48 118 direct jobs and 63 072 indirect jobs, accounting for a total of 111 190 jobs (Broiler Organisation, 2015). Chicken production therefore provides not only an important source of food to the nation, but a wide range of employment opportunities too. How many of these jobs are created in the free range chicken meat sector in South Africa is not known since SAPA does not report on production schemes in particular.

The corporate food system in South Africa is characterised by a racial history; "South Africa's agricultural sector was historically built on the basis of extensive support to white agriculture … representing the interests of white commercial agriculture" (Bayley, cited in Greenberg 2013:5). According to the Chief Executive Officer of Agriculture South Africa (AgriSA), Omri van Zyl, land reform is one of the leading challenges in agriculture; the great deal of uncertainty regarding land caps and private property rights are preventing sector growth (Uys, 2016). The economic and political concerns, however, do not address the lack of social redress in the agriculture sector. I found no literature addressing this specific social concern of ownership under free range chicken farming.

In contrast, human health, another social issue, is given consideration under free range chicken production by the Free Range Poultry Farming Manual of South Africa (FRPFMSA 2016). Free range chicken, as described by the FRPFMSA (2016), "is an

antibiotic-free system." The South African chicken consumer concerned about their health is uneasy about the use of antibiotics in their meat as they fear developing antibiotic resistance or "superbugs" (Kriel, 2015), and therefore opt for the free range option instead (Vermeulen & Bienabe, 2007).

Animal welfare could be viewed as an environmental factor, but I will take Castellini *et al.*'s (2012) lead and argue for animal welfare as a social indicator of sustainability. Animal welfare appears to be the leading social issue in free range meat production and is widely addressed by the South African free range sector (FRPFMSA, 2016; SAPA, 2012). SAPA (2012) uses the Five Freedoms as an animal welfare framework and stipulates that "[s]tocking densities must be adequate to accommodate the birds' normal behaviour" (SAPA, 2012:8). This includes barn and outside area stocking densities. Stocking densities for commercial production in South Africa is not specified by the SAPA guidelines and perhaps this indicates a lower concern for animal welfare in this sector. Finally, while there is an extensive code for transport guidelines for commercial chickens (SAPA, 2012), no specifications are given for the allowed maximum travel distances for free range chickens.

2.4.2.2.3. Economic sustainability

The tranformationist stance, as illustrated by Hopwood *et al.* (2005), takes an anti-capitalist approach to enable sustainability. The mainstream South African economic activity, however, leans more towards neo-liberal economics, which sits under the status quo approach. The South African food system mirrors Friedman (1998) and McMichael's (2005) theory of a corporate food regime, with supermarkets being the leading source of food provision in urban South Africa (Pereira, 2014).

The chicken industry is evidently sizeable, making it an important sector to study. Again, neither the SAPA or DAFF data report on the specifics of production schemes and therefore the size of the free range sector is not known. For now, one can infer that the general increase in demand for free range chicken (Kriel, 2015; Vermeulen & Beinabe, 2007) motivates the assumption that the industry is growing and thus economically active.

The data suggests that economic issues relating to chicken include trade (Ismail, 2017; Stander, 2016; Kriel, 2016) and the cost of rearing chickens (DAFF, 2014). Since the chicken industry sits within a neo-liberal economic system, one can assume that profitability is also important.

Chicken imports from the United States (and less so from the European Union), also referred to by many as dumping (Ismail, 2017), have been the basis of a big debate over the past 24 months, centred largely on price competition. In short, trade barriers for the United States were lifted and on-the-bone imported meat has been available in South African stores since 2 March 2016 (Stander, 2016). These imports form part of the African Growth and Opportunity Act and have been branded as an opportunity to feed the poor and train historically disadvantaged individuals in the business of meat importing and packaging (Stander, 2016). The burden of imports on local producers have been justified by strict quotas (Stander, 2016).

SAPA reports that poultry imports make up 26 percent of poultry meat consumption, an increase from 2015's 23 percent. The value of total poultry imports for 2016 amounted to R5.48 billion; a 17.2 percent increase in comparison to imports for 2015 (Stander, 2016). Poultry exports also increased marginally since 2015 by 2.2 percent, amounting to 74 021 tonnes in 2016, with a value of R1.184 billion. The imports industry is evidently larger than that of exports. The figures highlight the size of the industry, especially the domestic market's demand for chicken. Again, neither SAPA or DAFF report on free range chicken, which means the data on imports and exports for free range chicken are unknown.

The cost of rearing chickens is highly influenced by the cost of feed (DAFF 2014). Poultry production systems also have a high dependency on imported feed, particularly imported soya oil cake (and maize), resulting in an increase in animal feed prices of 130 percent between 2007 and 2012 (DAFF, 2014). An estimated 63 percent of soya oil cake is imported (DAFF, 2014). According to Stander (2016:27), "Maize prices [also] hit record highs as a result of the devastating drought caused by the El Niño weather system." It is important to note that the price of maize is controlled on the international market, and therefore negative fluctuations in the Rand also affect the cost of farming. Depending on the feed chosen by free range chicken

farmers, these costs have an impact on them too. The literature, however, is not particular about the type of feed given to free range chickens, although grey literature suggests it is antibiotic free with no animal by-products (FRPFMSA, 2016). The SAPA (2012) guidelines also require 50 percent living vegetation; a challenge to implement with water restrictions. The Western Cape, the region of focus for this study, faces the worst drought in the region since 1904, being declared a disaster area in March 2017 (Mosaka, 2017).

Free range chickens also imply longer rearing times, which means more feed days and higher costs (Leinonen *et al.*, 2012). Castellini *et al.* (2012) found that 20 percent more was spent on feed in organic systems than in conventional systems. However, the definitions and guidelines are clear on increased space for free range chickens. Such an increase in space implies an increase in costs, especially if that space is not readily available for farmers transitioning from conventional to free range farming.

Other increased production costs include an increase in water and electricity (energy) costs (Stander, 2016). The South African Broiler Organisation (2015) reports that water restrictions and droughts were the greatest challenges documented in 2015. This would have affected free range production too. Some studies find that the energy use is reduced by 15 to 40 percent in organic poultry production, but if the rearing times are longer, these reductions are sometimes overridden because there is more feed needed per kilogram of meat production (Foster, Green, Bleda, Dewick, Evans *et al.* 2006). If organic production implies longer rearing times, it can be assumed that this could be applied to free range production too.

It is important to note that free range products usually have a price premium (Lim Tung, 2016), which could cover such increased costs. According to Vermeulen and Bienaben (2007:6) South African free range chicken meat is regarded as a healthier meat option and this is usually "associated with a price premium". Although SAPA does share the market share that each producer holds, none of these are explicitly free range producers; they also do not report on the profitability of these chicken companies.

2.4.2.2.4. Free range sustainability in conclusion

Considering free range chicken as a sustainable alternative and doing so within a nested view (Griggs, 2013) requires a more comprehensive consideration of its impact on all three sustainability systems: environmental, social and economic. Based on the data presented here free range chicken production may well have stronger social system considerations than conventional chicken production, particularly in terms of its focus on improved animal welfare and human health. Unfortunately, little data is available on whether free range systems influence a change in ownership structures and the conditions of labour. Given that most free range production remains fixed in a corporate food regime, it can be regarded as a status quo approach (Hopwood *et al.*, 2005) to alternative food production. If free range chicken creates new markets and shifts the concentrated market power, it could however, be considered more economically sustainable. Yet, the indication that it is more expensive could pose a challenge for the growth of such a market. None of the studies reviewed considers this possibility. Lastly, the literature reveals that free range chicken production has a lower environmental impact compared to other livestock production methods, yet production inputs such as feed, and outputs such as manure, need to be considered when establishing free range production as a more environmentally sustainable alternative. On the whole, it seems that free range chicken production may offer slightly better sustainability credentials than conventional production. However, more empirical data is needed, especially in the South African context, to understand whether the local practice of free range chicken production is similar to what is described in the literature.

2.5. Conclusion

In this chapter I have provided context for this research study. It started with an overview of the food system as a whole, focusing on the impact of food production on the Earth system, and taking a brief look at major transitions that determine food system trends. These trends include population growth and the second urban transition, the Big Food transition and the corporate food regime, the supermarket transition, and the nutrition transition and global health concerns. All of the above illustrated the change in meat production, provision and consumption, including the

impact this has on the Earth system, animal welfare and human health. Despite these challenges the demand for meat has been steadily rising, urging humanity to find alternative, more sustainable production methods.

In the second part of this review I unpacked the term 'sustainability', providing theories and interpretations of sustainability as given by Mebratu (1998), Hopwood *et al.* (2005), Halberg (2012) and Griggs (2013). The nested view of sustainability, as theorised by Griggs (2013), was then argued to be the most suitable model for sustainable development and used throughout the rest of the review to discuss the alternative meat production method, free range.

In the last section of this review I investigated free range as an alternative, more sustainable production method. I started by looking at conventional chicken production to establish what sustainability concerns are present in this system. This informed the comparison between conventional and free range production in establishing the latter as a better alternative. I then briefly looked at the history of free range chicken production, which turned out to be rather under reported, before discussing the most reported element of free range chicken production – animal welfare – ascertaining the history and current state of legislative practices. I established that free range chicken production is poorly regulated and based on broad guidelines. I then concluded this section by looking at free range chicken production through the three systems of sustainability put forward by Griggs (2013). I started with the most important (as argued by Griggs) – the environmental system – followed by a review of the social system and lastly the economic system.

The next chapter will use the context provided in this chapter to formulate the research problem. It will also discuss the research approach, design and methodology for this study.

Chapter 3: Research Methodology

3.1. Introduction

This chapter covers the research purpose, design and methodology as well as the methods of data collection and analysis used throughout this study. I hold a social constructivist worldview (Creswell, 2014; Crotty, 1998; Mouton, 1996) and used a qualitative research methodology to conduct this exploratory study (Denzin & Lincoln, 2005; Mouton, 1996). My research was primarily inductive (Creswell, 2014), using case study design to conduct a social inquiry (Stake, 2009; Stake 2005; Yin, 2005) with semi-structured interviews, photographs and some document analysis as the data collection methods. For data analysis I used thematic analysis (Braun & Clarke, 2006) by means of coding to find patterns, or themes in the data (Friese, 2012; Saldaña, 2009). The chapter concludes with ethical considerations and a discussion of the study's limitations.

3.2. Research purpose

3.2.1. Research problem

Dominant approaches to livestock production are harmful to the environment, human health and animal welfare, yet meat consumption globally and nationally is on a rapid ascent. Sustainable alternative production approaches are thus urgently required. In the category of rising meat consumption, the rise in poultry consumption and production has been the most rapid, warranting specific attention. Within the poultry industry, free range chicken production is the main alternative offered in South Africa. However, there are no laws that regulate free range chicken production in the country, so it is unclear what this alternative entails and whether it is actually more sustainable.

3.2.2. Research objective

The objective of this study is to explore *who* and *what* determines whether broiler production is free range or not.

3.3. Worldview: Social constructivism

I hold a social constructivist worldview; this worldview maintains that most meaning is created in social reality. Conversely, I do not subscribe to a positivist worldview that believes "a full understanding [can be reached] based on experiment and observation [and that c]oncepts and knowledge are product[s] of straightforward experience, interpreted through rational deduction" (Ryan, 2006:13). According to Creswell (2014) social constructivism, often combined with interpretivism, holds the view that individuals seek understanding in the world they live and work in. Mouton (1996:46) asserts that "[social] constructivism is the doctrine that complex mental structures are neither innate nor passively derived from experience, but are actively constructed by the mind." From this worldview, subjective meaning of experiences is produced individually and collectively; these meanings are multiple and in a constant state of flux, leading the researcher to look for the complexity in views, instead of narrowing meanings into a few ideas (Bryman & Bell, 2014; Creswell, 2014; Weinberg, 2014). Crotty (1998) posits that the researcher's responsibility toward these complexities is to: 1) ask open ended questions so that participants share their worldviews, 2) seek to understand the context or setting of the participants by visiting their context and personally gathering the information, and 3) generate meaning from the data that has been collected in the field – an inductive research process.

I am conscious of the fact that my own version of reality could "contaminate" the views of the participants and therefore I have attempted to remain open to the subject, especially when engaging with participants during interviews. The intention was to truly get a sense of the participants' own experiences and their understanding of what makes something free range without imposing my own views. Crotty's (1998) recommendations guided my data collection approach: I asked semi-structured questions, visited participants in their work and/or life contexts, and made field notes

to document my own views regarding what makes something free range. My process was mostly inductive, even though I conducted a full literature review before data collection, which has guided some of my thinking. I have, however, focused my attention on being open to what the participants say (and do) to ensure a "thick" account of their views. This chosen data collection strategy, ideal for a constructivist worldview, is described in more detail under the data collection section of this chapter.

3.4. Research methodology: Qualitative

As an exploratory study the aim was to generate knowledge about the socially constructed world of free range chicken. It aimed to develop an improved understanding of free range chicken production by evaluating, describing and explaining this social phenomenon (Mouton, 1996). A review of the literature revealed that not much is known about free range chicken meat production in the Western Cape and little is documented about free range farming as sustainable alternative. Therefore, approaching this as an exploratory study seemed most suitable and a qualitative research methodology was chosen as it is well suited to exploratory studies.

Creswell (2014) defines qualitative research as a methodology of exploring and understanding the meaning that individuals and groups ascribe to social and/or human problems. He further proposes that inductive research is especially appropriate for such an approach. Denzin and Lincoln (2005) describe qualitative research as a complex, interconnected family of concepts and assumptions that is defined by a series of essential tensions, contradictions and hesitations in the face of political and logical differences. Qualitative research also has no single theory or paradigm, nor does it have a distinct set of methods and practices that it can call its own (Denzin & Lincoln, 2005). Denzin and Lincoln (2005) therefore argue that qualitative researchers use an array of interconnected interpretive practices in the hope to continuously gain a better understanding of the subject matter under study, whilst being constantly challenged to find the distinction between real and constructed. The aim of this exploratory study was to inductively ascertain who determines whether something is

free range and what meaning those who bring free range products to the market ascribe to the practice of free range farming. The flexibility and capacity of a qualitative methodology to deal with the complexities mentioned further highlight its suitability for this study.

3.5. Research design: Case study

Case study research was chosen as the research design for this study. Yin (2005:1) describes case studies as empirical inquiries that study contemporary phenomena "in depth and within real-life context," using "multiple sources of evidence and … prior development of theoretical propositions to guide data collection and analysis." Yin (2005) also posits that a case study is the preferred method when *how* or *why* questions are asked and when the researcher has little control over events. Stake (2005) maintains that a case study is suitable for both quantitative and qualitative studies.

This qualitative exploratory study aimed to investigate the contemporary phenomenon of a rise in an alternative chicken meat production method, namely free range. A case study research design seemed suitable because the aforementioned phenomenon was investigated by engaging in the real life contexts of the selected research participants, in an industry that I have little involvement in and hence little control over. The inclusion of multiple sources of evidence to build the dataset, and asking *how* and *why* questions, further substantiates the choice of this research design method.

According to Stake (2009), a case study does not only have to be a single person or an enterprise, it can be any bounded system of interest. This research study was a case of such a bounded system: those who provide (produce, sell, cook or regulate) free range chicken meat in the Western Cape. Since this was not a comparative study, a multiple case study design proved unnecessary. This was also an intrinsic case study, because the desire was not to generalise the findings of the research but to better understand a particular case (Stake, 2009).

Stake (2005:450) argues that "achieving the greatest understanding of [a] critical phenomena depends on choosing the case well." He holds that this helps to ensure that the best possible explanation of the phenomenon is achieved. Although the Western Cape is a relatively wealthy region with free range chicken available in most supermarkets, I cannot claim that it primarily informed my case selection criteria. My case selection was instead influenced by my geographical and social access.

In terms of participant selection, I chose a varied pool of participants in the bounded system that bring free range products to the market based on the specific purposes associated with answering a research study's question. Such an approach to participant selection is called a purposive sample approach (Teddlie & Yu, 2007). Before meeting with any of these participants I ensured a reasonable understanding of their context. This was a necessary step as Stake (2005) asserts that engaging with participants requires an awareness of the complexities of their context. Their context is embedded in South Africa's corporate-driven food system, as discussed in the literature under food system trends and transitions, which resulted in some obstacles that limited access to certain information I requested. This is discussed in more detail under the data collection section of this chapter.

A feature that is common in case study design is triangulation, which is generally considered to be "a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation" (Stake, 2005:454). It is also one of the ways case studies gain credibility (Stake, 2005). However, it is not regarded as necessary by all constructivists. Denzin and Lincoln (2005) are a prime example as they believe that there is no "external reality" that can be discovered. Nonetheless, they maintain that the use of triangulation reflects an attempt to secure an in-depth understanding of the phenomenon in question. Triangulation was therefore used in this case study to verify information gathered as views were multiple and varied.

It is worth mentioning that I was able to avoid potential pitfalls thanks to Flyvberg's (2006) article on the five common misunderstandings of case studies. I mention a few of these misunderstandings here. The first is that theoretical knowledge is more valuable than practical knowledge. Flyvberg (2006) rejects this notion, arguing that

context-dependent knowledge and experience are the key drivers in creating experts; theory alone cannot create experts. This notion supported my decision to gather data in the field inductively. The second misconception is that one cannot generalise from a single case, therefore, the single-case study cannot contribute to scientific development. This concern is also highlighted by Yin (2005). Flyvberg (2006) counters this by arguing that not all research needs to be generalised, maintaining that sometimes a case is significant enough on its own. The solution is to choose a case strategically. Given the lack of information available for free range chicken meat production in general, a single case study of a region such as the Western Cape was therefore justified as valuable in its own right. A final misconception highlighted by Flyvberg (2006) is the fact that is often difficult to summarise case studies since they tend to mushroom, rather than narrow as the research progresses, and so one is left with more to pay attention to rather than less. Flyvberg's (2006) argument is that such a summary is not necessarily important or even desirable – for him good case studies should be read as narratives in their entirety. Another common concern regarding case studies is that they take too long, resulting in massive, unreadable documents. As will be seen in the section to follow, my study did not use an ethnographic approach nor participant observation methods, so I was able to keep the data collection and the documentation of my findings from taking too long. I also took into account the warning against mushrooming data in that I kept the data collection focussed on the information required to answer my research question.

3.6. Data collection

3.6.1. Literature

The literature consulted for this study included peer-reviewed academic research about the topic and grey literature concerning the chicken industry (with a particular focus on the South African market), where peer-reviewed research was scarce. For the more general sections of the literature review, as a starting point, I referred to the literature I was already aware of from my postgraduate diploma studies in sustainable development. In order to broaden my understanding of particular issues relevant to this research, I used an ancestry approach to find other key documents referred to by

these papers, and found more up-to-date papers that cited all of these using Google Scholar's citation tracker.

For the more specific issues related to this research (meat production, specifically chicken, with a focus on alternative production approaches and free range), I searched academic databases like Google Scholar and EBSCOHost. The search terms used included 'chicken production', 'chicken production alternatives', 'free range chicken', 'sustainable food production alternatives' and synonyms, in various combinations. This is referred to as the building blocks approach and uses different Boolean operators to enlarge or reduce the results as needed (The University of Arizona, 2015).

All of the search terms provided ample results, except for free range as a sustainable environmental alternative. This kind of information was limited and mostly embedded in life cycle assessment studies done to determine the environmental impact of various livestock production methods. As is seen in the literature chapter, free range production is not explicitly described as a sustainable alternative, but appeared to be bundled with writing on sustainable alternatives that then describes free range production as a better or more responsible choice. The literature also most often spoke about free range production as an animal welfare issue. Information sourced on free range chicken in South Africa was mostly from grey literature, such as poultry industry reports, websites of free range activists, their news articles and farming magazines such as *Farmers Weekly*. All of this provided context for this study and made me aware of the potential gap in the literature, which this study aimed to help fill.

3.6.2. Sampling

I used 'purposive sampling techniques' defined as selecting units such as "individuals, groups of individuals [or] institutions, based on specific purposes associated with answering a research study's questions" (Teddlie & Yu, 2007:77). Purposive (or purposeful) sampling is the approach to sampling most commonly used in qualitative research. It is preferred over the random or representative approach of quantitative

studies as it requires a deliberate selection of specific settings and people in order to gather the data needed to answer the research questions (Creswell, 2014). My research sample was therefore a deliberate choice, and is explained later in this section.

Mouton (1996) adds that social scientists are interested in the types of social entities encountered in the social world. Since free range production is not formally regulated by law, I suspected the interpretation of the term would be varied. As a result, I selected various social entities, individuals, groups of individuals, organisations and institutions that work with free range animals and/or products (that is, those that bring free range products to the market). This included farmers, chefs, retailers (small and large) and organisations that safeguard the industry (government and independent institutions). To ensure a singular focus, I purposefully chose only those who claimed to work with free range production. I also studied documents containing regulation and guidelines for free range chicken production in South Africa and captured photos at sites of free range chicken production for data verification purposes.

I cast my net wide and requested participation from actors deemed as significant contributors to the sector. Their significance as a contributor depended on the volumes of product they brought to the market or by their regulatory importance, that is, such as the role they play in making laws and keeping the industry accountable. All the major retailers, government departments and non-profits, also known as special interest groups, met the criteria. The non-profits' importance was determined by their general reputation in the industry or by new reports that led me to understand their role and significance in the sector. I also targeted smaller participants that are providing free range products through new markets such as online markets, farmers' markets or speciality shops. Moreover, I used the snowball sampling method, defined by Sadler, Lee, Lim and Fullerton (2010:370) as an "outreach strategy [that] finds an individual … who has the desired [study] characteristics and uses the person's social networks to recruit similar participants in a multistage process." I thus contacted more participants based on participant recommendations.

I contacted 13 farmers that I found online or through referrals from my academic institution and from participants interviewed. Six agreed to an interview, with one of the major free range chicken producers declining and some smaller farmers not

responding. It is worth mentioning that this major free range producer had in fact said yes at first, but could not agree on a date due to their busy schedule. After having heard of the interview I had with the major retailer to which they supply, I suddenly got a different response from the producer. They did not want to participate in the study any longer, claiming that the retailer would have provided me with enough information. The retailer in question is the same one that claimed confidentiality on most of the important information requested. I contacted eleven retailers, including the big four: Woolworths, Checkers, Pick n Pay and Spar. Only two of the big four and two of the smaller retailers agreed to an interview; Checkers declined and Spar simply did not get back to me after numerous emails and phone calls. Checkers' reason was having too many similar ongoing research interests and no time to assist me. The smaller retailers who declined all claimed to be too busy and mostly referred me to their farmers, purporting that they were the actual people to speak to. I also approached eight chefs of which four agreed to be interviewed; the rest were not available.

Of the ten regulators I approached, only six agreed; they also claimed busy schedules. The regulator group was fairly heterogeneous, and included representatives of government sectors, industry associations and non-governmental organisations (NGOs), including special interest groups such as activists for animal welfare and healthy food production. One of these six regulators was unable to do a face-to-face interview; we therefore resorted to email correspondence. One regulator was a veterinary poultry consultant for government and commercial chicken entities, and I bundled him with the regulators. The Department of Agriculture Forestry and Fisheries (DAFF) declined an interview, but provided legislation, some in draft format, through email correspondence. Since the legislation has not been passed it was not included in the dataset. The interviews that were conducted ranged from 30 minutes to 90 minutes, with one exception where the interview took a total time of 13 minutes. Table 2 details the interviews including a few data caveats.

Table 2: Research participants

Participant	Language	Interview date	Place of interview	Caveats
Farmer 1	English	11 April 2017	At home in Mossel Bay	The business closed down before the interview date and so capturing images of their practices were not possible.
Farmer 2	English	11 April 2017	At farm in George	The farm owner was ill the day of the interview. The interview was conducted with the farm manager instead. I later compared his comments with that of other owners and sensed that there was a little less understanding of the dynamics of the industry.
Farmer 3	Afrikaans	13 April 2017	At farm in Plettenberg Bay	
Farmer 4	English	19 April 2017	At abattoir in Grabouw	The interview and farm visit did not take place on the same day; the farmer needed more notice. Farming protocols were deemed confidential yet I was allowed to read the documents. I was not allowed to take any notes or photographs of these documents though. This farmer also arranged a full tour of their abattoir for me. Again, I was not allowed to take photographs.
Farmer 5	English	25 April 2017	A farm in Stellenbosch	
Farmer 6	Afrikaans	23 May 2017	At farm in Rawsonville	
Chef 1	English	18 April 2017	At restaurant in Cape Town	
Chef 2	English	25 April 2017	At restaurant in Stellenbosch	
Chef 3	Afrikaans	25 April 2017	At restaurant in Franschoek	
Chef 4	English	18 April 2017	At restaurant in Cape Town	This chef split from his business partner shortly after the interview. I have not verified his new meat supplier.
Retailer 1	English	5 May 2017	Telephonic (Skype)	This retailer claimed that most of the information I requested was confidential, as a result this was a very short interview.

Participant	Language	Interview date	Place of interview	Caveats
Retailer 2	Afrikaans	9 May 2017	Coffee shop in Tygervalley, Bellville	This retailer's representative, whom I interviewed, has close ties to the Sustainability Institute and therefore provided a strong account for sustainability, although this was not necessarily part of the questioning. This might skew the data.
Retailer 3	English	18 April 2017	At coffee shop in Claremont, Cape Town	
Retailer 4	Afrikaans	12 May 2017	At coffee shop in Stellenbosch	
Regulator 1	English	21 April 2017	At offices in Gauteng	This regulator plays a national role, which is why the interview was held in Gauteng.
Regulator 2	Afrikaans	24 April 2017	At offices in Gauteng	This regulator plays a national role, which is why the interview was held in Gauteng.
Regulator 3	Afrikaans	8 May 2017	Telephonic (Skype)	
Regulator 4	English	25 May 2017	A coffee shop in Constantia, Cape Town	
Regulator 5	English	25 May 2017	At home in Somerset West	
Regulator 6	English	15–23 May 2017	Email correspondence	The dynamics of email correspondence resulted in information that could not always be unpacked in depth; something conversations allow for.

Approaching actors in the industry was challenging since I had limited networks that could provide easy access. However, as a trained chef, I knew this part of the sector well and could navigate it better. I also think that my social privilege provided me some access to important actors that others may not have been granted. I was raised in an Afrikaans home, but also spoke English fluently from a young age. This, coupled with the fact that I am white, gave me a considerable advantage in approaching the various participants, all of whom were white, and many of whom were Afrikaans. Most of the Afrikaans speaking participants also appeared far more open to speaking with me when they realised I could speak Afrikaans. My association with an academic institution also appeared to provide easier access, since I was not approaching the

topic from a journalistic angle, aiming to expose potential poor practices. I also promised anonymity to all participants, which appeared to be an important factor in their decision to participate. Despite these positive experiences, there were also hurdles. As already mentioned, I could not gain access to all the large retailers and to one of the large farmers. Furthermore, the large retailers who did agree to an interview purported confidentiality when I asked for some vital information, such as their free range production protocols. In the discussion chapter, chapter 4, under themes 4 and 5 I detail how this kind of confidentiality creates major challenges for the industry, leading to most doubting the authenticity of the claims made by others and therefore not trusting that the meat is really free range. Table 2 above also details these and other data collection challenges as caveats.

3.6.3. Data collection methods

Data was collected via semi-structured interviews, taking photographs at the participating farmers' farms, and via document analysis. According to Yin (2009) the case study's distinctive strength (over other research designs) is its ability to cope with a variety of evidence including documents, artefacts, interviews and observations. The variety of data chosen was therefore suitable to this case study design.

2.6.3.1. Semi-structured interviews

Interviews were conducted with actors who produce, cook, sell and regulate free range chicken meat in the Western Cape. Interviewing is the most appropriate method of data collection when working from a constructionist worldview since it provides access to how individuals (and groups) think about or view the world (Bryman & Bell, 2014; Creswell, 2014; Weinberg, 2014). Fontana and Frey (2005) contend that despite the residue of ambiguity in our language and therefore our questions, the interview remains the most powerful way to understand another human being. Such insight further supports my rationale for face-to-face data collection.

The form of interviews chosen for this study was semi-structured. Semi-structured interviews have the open or unrestricted qualities of unstructured interviews, but are based on an interview guide, usually directed by open ended questions (Yin, 2011; Vaccaro, Smith & Aswani, 2010). Semi-structured interviews contain more open ended questions, providing participants the opportunity to really express their views about the subject (Yin, 2011). This style of interview allowed me to be non-manipulative and exploratory as I went through the process of obtaining information from participants. Semi-structured interviews also require the research to adopt an appropriate style in each interaction instead of assuming a uniform demeanour across all interviews (Yin, 2011). Semi-structured interviews (and of course skilled interview techniques) therefore allows participants to speak more freely about their role in the sector, including what motivates their understanding of free range chicken meat production (Yin, 2011). This has the potential of becoming a two-way conversation with the participant even posing questions to the researcher (Yin, 2011). Semi-structured interviews also accommodate interviewing more than one participant simultaneously (Yin, 2011), which happened once during my data collection process; farmer 3 is technically two people, husband and wife.

It is important to note, as Fontana and Frey (2005) do, that the interview is not a simple process of systematically gathering data; it does not automatically provide a more accurate and true account of the participant's life. Fontana and Frey (2005) therefore support the notion that interviewing still requires an immense amount of skill. I consulted extensive literature to develop this skill (Brinkmann, 2013; Josselson, 2013; Gillham, 2005; Hollway & Jefferson 2000; Foddy, 1993), but it was only through actual experience in the field that I felt myself becoming better at asking questions, adapting them as each interview progressed and leaving silences for participants to add to their answers.

For this study the interview questions were aimed at understanding the role of the participants in the sector, and ascertaining what they do and how they practice and/or interpret free range chicken meat production or products. The questions were also aimed at assessing why they view or understand their role or involvement in the industry the way that they do, which in turn would inform how they practice or understand free range chicken meat. Vaccaro *et al.*, (2010:124) share that "[s]emi-

structured interviews [are] often focused on [the] explanation of a particular topic of relevance." Therefore, the interviews in this study were tailored to the actor's specific role in the industry so that different questions were posed to farmers, chefs and retailers on the one hand and regulators on the other. Table 3 gives a brief overview of the typical questions I asked. Stake (2005) reminds us that "the caseworker … [must] anticipate the need to recogni[s]e and develop late-emerging issues." As a result, I adjusted research questions as I gained more knowledge about the industry and about people's roles therein. A good example of this was the following:

Question: "What does free range mean for you?"
Answer: in discussion … "I have contract growers."
Question: "How do you know they are free range?"
Answer: "I have a contract … and a protocol that details everything … we've gone to the nth degree."

From this discussion I then realised that since there are only broad guidelines and not specific regulations stipulated for production practices that some people have written their own protocols. When I then asked to see these, however, my requests were always declined. (For a detailed discussion of this, see chapter 4.)

Appendix A provides the interview questions for each group of participants. All interviews were audio recorded, transcribed and then loaded to Atlas.ti for coding. The section on thematic analysis in this chapter describes this in detail.

Table 3: Overview of interview questions

Farmers, chefs and retailers	**Regulators**
Tell me how you got into this industry.	What is your role in the industry?
What does free range mean to you? How do you know this is what you are providing (farmers) or getting (chefs and retailers)?	How does your organisation view free range?
What are your views on animal welfare (if not addressed in previous question)?	What is your view on regulating the industry?
Who is your free range for (if not addressed in previous question)?	What are typical challenges or opportunities in the industry (if not already addressed)?
How does this speak to sustainability?	
Farmers, chefs and retailers	**Regulators**
What are the greatest challenges in free range chicken farming?	
Tell me about the free range farming community?	

2.6.3.2. Photographs

It can be argued that photographs form part of a post-positivist tradition by providing visual information that is supposed to support 'realist tales' a process to verify the facts that constitute empirical 'truth' (Denzin & Lincoln, 2005). Photographs for this study were not used for this purpose but instead as a form of observation and a means of remembering (Denzin & Lincoln, 2005). I found that most farmers wanted to show me what they do and this often happened after the interview when we walked about the farm.

During this walkabout, I captured photographs of the free range chicken farming practices. I took between ten and fifteen photographs at each farm that included images of the chickens, their housing, feed and water, heating and cooling mechanism and the grounds outside of the housing or barns. This was only done at farms where I interviewed the farmer, and not at farms that other participants spoke of, or used. For example, even though Retailer 1 spoke about the farmer who supplies them, I did not interview that farmer and therefore did not photograph that farm. I was also unable to take photographs of Farmer 1's farm, since their business had closed down.

2.6.3.3. Documents

In this study, there were particular documents associated with different interviewee categories. I used document analysis for data verification based on Bowen's (2009:27) suggestion that "[d]ocument analysis is often used in combination with other qualitative research methods as a means of triangulation." The documents I wanted to obtain from regulators related to standards and regulations. From farmers, I hoped to gain access to written production protocols (guidelines on how they run their free range farming operation). I also consulted websites as part of the data verification process, comparing what participants said with what they do in practice. For example, Retailer 1's interview data, relevant company documents and their company website all formed part of the dataset for Retailer 1. However, most of the farmers were unwilling to share their production protocols with me, and only Farmer 4 allowed me to view their protocols, but I had to view these in their offices, and was requested not to take photographs or make copies thereof. I discuss the implications of this lack of access to written protocols further in chapter 4.

3.7. Data analysis: Thematic analysis

3.7.1. Thematic analysis approach

I used thematic analysis to analyse the data collected in this study. According to Braun and Clarke (2006:79) "thematic analysis is a method of identifying, analysing and reporting patterns (themes) within data." Boyatzis (1998) describes thematic analysis as a process of encoding information to explore complex, multidimensional phenomena. DeSantis and Ugarriza (2000) assert that it comprises the search for, and association of common threads that run across an entire set of interviews. Braun and Clarke (2006) maintain that thematic analysis is widely used, yet poorly branded, and is independent of method and theory.

Thematic analysis is suitable for studies that i) aim to analyse narrative materials of life stories, ii) are either based on a realist, essentialist or constructionist perspective, and iii) analyse data by describing and interpreting, including non-linear analysis

process, which are both inductive or deductive and emphasise context (Vaismoradi, Turunen & Bondas, 2013; Braun & Clarke, 2006). For this exploratory study I deemed thematic analysis relevant since the participants are diverse and the context and issues are complex – it is transdisciplinary, containing social, political, economic, biological and ecological components that interact in dynamic ways. Most data to be collected are interview-based consisting of narratives of how and why people farm, sell, cook or regulate free range chicken meat. This presented a range of views, which I maintain are socially (individually and collectively) constructed. Thematic analysis provides a platform for inductively finding similarities across the dataset (these socially constructed views), which generate (in some instances) unanticipated insights and useful social interpretations (Braun & Clarke, 2006).

Braun and Clarke (2006) strongly assert that themes do not merely emerge from the data, leaving the researcher to passively discover the themes. Instead the researcher plays an active role in identifying the themes and patterns. Saldaña (2009) supports this and states that all coding is a judgement call where we bring our personalities and perceptions into the process. My active decisions for codes were therefore driven by my desire to understand how the alternative chicken production method, free range, is understood, interpreted and ultimately practiced. The purpose of achieving the research objective was what guided my decisions of themes. The report does not provide a reflection of the whole dataset, but a nuanced account of the particular identified themes (Braun & Clarke, 2006). Themes are also clearly defined in table 4 (below) and to maintain focus and I include descriptions of what the theme are and what they are not.

The reason for working with themes is that they "capture something important about the data in relation to the research question, and represent[s] some level of patterned response or meaning within the dataset" (Braun & Clarke, 2006:82). Braun and Clarke (2006:82) also caution that "more instances [of a theme] do not necessarily mean the theme itself is more crucial," instead "the 'keyness' of a theme is … whether it captures something important in relation to the overall research question." The themes for this study were consistently chosen based on prevalence in the dataset (in other words, an inductive analysis approach was used) and on whether they achieve the research objective. The inductive approach results in themes that are more

closely linked to the data than to the questions posed to the participants (Braun & Clarke, 2006).

Furthermore, I chose to look for latent themes instead of semantic themes, and this choice made the study more interpretive in nature. Braun and Clarke (2006:84) describe latent themes as "an attempt to theori[s]e the significance of the patterns and their broader meanings and implications." Semantic themes, on the other hand, identify surface meanings of data and generally produce only descriptive accounts of the data (Braun & Clarke, 2006). Braun and Clarke (2006) also point out that the identification of latent themes, that is, the underlying ideas, assumptions and conceptualisations, is most consistent with my constructivist stance.

The five major themes that came out of this study were:
1) free range means a bird that is reared with good animal welfare,
2) free range means quality meat,
3) free range means a profitable business,
4) free range is determined by decision makers or by access to markets, and
5) free range is associated with concerns about the lack of regulation.

The first four themes speak directly to the research objective – who and what determines whether chicken meat production is free range – whereas theme 5 addresses the challenges actors face in determining free range chicken meat – a lack of regulation. Descriptions for each theme is detailed in table 4. A full list of themes and categories are available in appendix B.

Table 4: Theme descriptions

Names	Descriptions
Theme name: T1: Free range means a bird that is reared with good animal welfare. **Category names:** T1:C1: The living environment of the birds T1:C2: The treatment of the birds T1:C3: The lifespan of the birds T1:C4: What the birds are given to eat and drink T1:C5: The manner in which birds are prepared and transported for slaughter	**Theme description:** Free range chicken production involves an animal husbandry practice, with a specific focus on the treatment of the animal. Therefore, how the birds are reared or how people speak about their expectations of how birds ought to be reared earmarks this theme. **What the theme is not:** This theme is not about testing welfare against any other external standard of animal welfare, such as laws or regulations, unless such laws or regulations were referenced as forming part of that specific practice.
Theme name: T2: Free range means quality meat **Category names:** T2:C1: The quality of the meat T2:C2: The price of the meat	**Theme description:** This is a topic about food, in this case chicken meat, so everyone speaks about the meat – that is, the bird after slaughter – for consumption purposes. While this theme is solely about the meat, how the chicken was reared will impact the quality of the meat (mostly referring to the chicken's diet and stress levels). **What the theme is not:** This theme is not about the farming practices of rearing free range chicken, which is addressed in theme 1. However, issues relating to farming practices are raised, such as antibiotics or hormones in the meat. This will be discussed in the context of the quality of the meat and not in the context of the health or quality of life for the bird. The price of quality meat will not be a discussion about the cost of running a free range business as this is included in the next theme.
Theme name: T3: Free range means a profitable business **Category names:** T3:C1: It's a business opportunity T3:C2: Cost of rearing chicken T3:C3: Market pressures	**Theme description:** This theme talks about free range chicken production as being a commercial undertaking – everyone mentions in one way or another that it is a business or that is must make money or make commercial sense. The commercial viability determines how the chickens are reared and therefore how free range is defined. **What the theme is not:** This theme is not about the political, social or ecological aspects of free range chicken. It is purely about the economic factors, and what the aforementioned aspects mean in an economic sense.

Names	Descriptions
Theme name: T4: Free range is determined by decision makers or by access to markets **Category names:** T4:C1: Retailer requirements and strategies T4:C2: Farmer practices and strategies T4:C3: The head chef and restaurant profile T4:C4: Perceived consumer requirements T4:C5: Activists' role in determining the system T4:C6: The lack of community	**Theme description:** This theme is about relationships and decision-making power. It is not about the legal regulation (or lack thereof), so it is not to document the critique of the laws or guidelines for free range and animal husbandry in general. **What the theme is not:** It is not about the business of free range as discussed in theme 3. Instead it is about who determines where or how the business is conducted.
Theme name: T5: Free range is associated with concerns about the lack of regulation **Category names:** T5:C1: Free range is not regulated T5:C2: Free range audits T5:C3: Regulators in an unregulated industry	**Theme description:** There is an overwhelming concern expressed by almost all of the participants about the lack of regulation and what impact it has on the free range sector. These concerns are associated with the challenge of actually determining what free range is. **What the theme is not:** This theme will not analyse the current SAPA guidelines for free range per se, but will share people's views on these guidelines: what works and what doesn't.

3.7.2. Computer assisted thematic analysis

In order to decide themes my coding methods were guided by Friese (2012) and Saldaña (2009). Friese (2012) specifically refers to Atlas.ti, the software programme I used to code my data, whereas Saldaña (2009) provides a general overview of coding methods in qualitative research. Friese (2012) developed a coding process she calls the NCT process – noticing, collecting and thinking – that can be applied no matter what theoretical background one has. Friese (2012) further describes coding as a recursive process, of a first and second (and sometimes a third and fourth) cycle coding, which then leads to establishing categories (and sometimes sub-categories) and thereafter themes. Saldaña (2009:8) proposes that "to codify is to arrange things in a systematic order, to make something part of a system or classification, [so that you can] consolidate meaning and explanation." Coding therefore assists one with the grouping of similar data into families or categories (Saldaña, 2009). Categories become themes when "you begin to transcend the 'reality' of … data, progress[ing] toward the thematic" (Saldaña, 2009:11). Saldaña (2009) further argues that themes

should be kept to a minimum, while Creswell (2007) asserts that five to seven themes are enough.

My experience of coding my data was that it was indeed an iterative process. I initially started with quite descriptive codes, resulting in over 500 codes. I then merged similar codes that essentially spoke about the same thing. The code about *T1:C4:O1: The feed that is given*, for example, initially consisted of codes such as organic feed, protein supplement, free range feed, commercially produced feed, grubs and insects, etc. Collapsing these codes then reduced the number of codes to just over a 140 codes. I could then group these codes into 19 categories. These categories then gave rise to the five major themes detailed in table 4.

The notion of a free range chicken proved to be significantly more complex than initially presumed. What people said and did varied, so finding a theme(s) that encapsulated what their words and actions shared was complex. My initial themes were deliberately descriptive, as recommended in Friese's NCT approach (2014), which merely provided surface meanings. During later cycles of coding, I looked more closely at what people were actually saying (that is, their underlying assumptions or intentions), which is a more latent thematic approach (Braun & Clarke, 2006). Through this I discovered deeper, underlying ideas and assumptions; all things which a constructionist worldview demands.

Braun and Clarke (2006) contend that the strength of thematic analysis lies in its ability to provide a detailed, purely qualitative report of the data collected as opposed to a quantitative descriptive analysis which is a characteristic of content analysis. Drafting the final report confirmed the truth of Stake's (2005) statement about the knowledge transfer from the researcher to the reader: it is the 'unfolding of realisation', a term borrowed by Bohm (1985 in Stake 2005). Stake (2005) beautifully describes the researcher's knowledge transfer of the case as a hazardous passage from writing to reading, since it is impossible to predict what the pre-existing knowledge of the readers is. The analysis and writing of this qualitative report therefore required a skilful approach. In order to honour the anonymity of the participants I have referred to all participants as male, since there are so few females in the industry, it would have been easy to establish who they were if I kept it as their true gender. Farmer 3 is

referred to as “they”, since they are in effect 2 farmers, a husband and wife, that participated in this interview.

3.8. Ethics and limitations

All research requires fitting consideration and attention to ethics and research limitations. I have detailed my considerations for this study below.

3.8.1. Ethical considerations

The ethical considerations for this study was guided by the Stellenbosch University’s ethical aspects of scholarly and scientific research. Before commencing the study, ethical clearance was obtained from University of Stellenbosch’s Humanities Research Ethics Committee (SU-HSD-004471). Obtaining this clearance included providing the Committee with copies of my research proposal, data collection instruments, informed consent forms and participant information sheets.

All participants were provided a full description of the research purpose, guaranteed anonymity and the option to withdraw from the study whenever they wanted to. This was confirmed in the consent form that I signed along with them before each interview commenced. Interviewees were also asked for permission to record the interviews and all consented. I recorded interviews using my iPhone, transferring the recording file to my personal laptop after each interview and deleting the file from my phone. I did not save the files on my computer using the participants’ names, nor were the transcribed interview documents associated with names. My computer is password protected, as are backups.

I performed most of the transcription of interviews myself, but, when external transcribers were used, they signed a non-disclosure agreement. Established scholarly and scientific norms and practices were also adhered to, such as acting honestly and professionally and by avoiding plagiarism through acknowledging all sources used. All the relevant public interests were also considered by making the scholarly and scientific results known responsibly.

3.8.2. Limitations

I had two major limitations in this exploratory case study. Firstly, a lack of access to some intended interviewees due to my limited social capital in the chicken production sector; and secondly, limited time preventing me from exploring the consumers' understanding of free range chicken meat. I briefly detail each of these below.

My limited social capital in the retail and government sectors, and therefore my lack of access to decision makers, led to somewhat difficult initial contact with retailers and law makers. The fact that so many retailers refused to speak to me or refused to provide access to or even an overview of their internal standards around free range, was frustrating. However, this secrecy around free range standards was an interesting finding in itself, and is further discussed in chapter 4 section 4.5.1 and 4.6, and chapter 5, section 2.1.2.

Due to the time constraints of doing a one year Masters' research project, I deliberately chose to exclude consumers from this study. When conducting the interviews, it became clear to me that some of the free range industry players I spoke to seem to regard the consumer as the one who "holds the power" in determining what free range chicken means. It would therefore be very informative to continue or extend this research in the future by comparing the findings of this study South African consumers' opinions and understandings of free range chicken.

3.9. Conclusion

This chapter presented the rationale behind the research purpose, its design, the methodology used and the methods of data collection and analysis employed in this study. This exploratory study, pursued from a social constructivist perspective (Creswell, 2014; Mouton, 1996; Crotty, 1998) used a case study design to conduct this social inquiry (Stake, 2009 and 2005; Yin, 2005). Some of the benefits of the case study design are its suitability to *how* and *why* questions; capacity to handle multiple data types; and ability to study a bounded system of interest without necessitating generalisation. The data collection methods – semi-structured interviews, photographs

and document analysis – allowed for data verification in order to develop an in-depth understanding of the topic under investigation. The interviews in particular presented an opportunity to really understand the role of the participants in the industry and was therefore considered the primary form of data collection. Thematic analysis (Braun & Clarke, 2006) was the method employed to analyse the data. I was able to find patterns or themes in the data by means of coding (Saldaña, 2009; Friese, 2012). This method allowed me to consistently capture the ideas shared across interviews as well as uncover unexpected ideas that answered the research question. The chapter concluded by detailing the ethical considerations and limitations of this study. What follows next is chapter 4, which will discuss the research findings.

Chapter 4: Case Study Findings

4.1. Introduction

This chapter details the findings of this study. As discussed in Chapter 3, I interviewed farmers, chefs, retailers and regulators. I also took photographs at the farms that I visited and included a few relevant documents into this dataset. To present the case study's findings I used thematic analysis (Braun & Clarke, 2006), and determined the major themes based on prevalence in the case study data and on whether the theme achieved the research objective to analyse *who* decides, and *what* determines whether chicken meat is free range. The five themes to be discussed in this chapter are: i) free range means a bird reared with good animal welfare in mind, ii) free range means quality meat, iii) free range means a profitable business, iv) free range is determined by decision makers or by access to markets, and v) free range is coupled with concerns about the lack of regulation. Each theme discussion includes a table that contains the categories under each theme, a definition of what the theme is and a description of what the theme does not address.

4.2. Theme 1: Free range means a bird that is reared with good animal welfare

Theme 1 can be described as the empirical data that speaks about the living birds, that is, their life before being slaughtered for consumption. Free range chicken production is an animal husbandry practice, with a specific focus on the treatment of animals. Therefore, how the birds are reared or how people speak about their expectations of how birds ought to be reared, is at the heart of this theme. This theme was evident in all of the data, with codes in each category appearing almost across the entire case study dataset. Given the prevalence of this theme, it appears to be one of the main ways in which people describe what makes the chicken that they rear, cook or sell, free range. This is thus a theme chosen because it speaks to a part of the research objective – *what* determines whether broiler production is free range.

The overarching topic within the discussions about how the animal is reared is "welfare", yet all the study participants determined or defined this differently. Descriptions varied from "natural chickens" (Farmer 1, 2017; Regulator 4, 2017), to "happy chickens" (Famer 2, 2017; Farmer 6, 2017; Regulator 2, 2017; Chef 4, 2017), to being "respectful" (Chef 1, 2017; Chef 2, 2017) to practices that "treat animals well" (Retailer 3, 2017). These descriptions then framed either the requirements that farmers set for themselves or what retailers, chefs and regulators required of farmers. These perceived requirements were supported by specific rearing practices or methods to ensure that this welfare was realised.

This theme consists of five categories, detailed in table 5: i) the living environment of the birds, ii) the treatment of the birds, iii) the lifespan of the birds, iv) what the birds are given to eat and drink, and v) the manner in which birds are prepared and transported for slaughter. These categories provide detailed insight into the perceived particulars required to ensure good animal welfare within free range practices.

Table 5: Theme 1: Free range means a bird reared with good animal welfare in mind

Theme name	**Category names**
T1: Free range means a bird that is reared with good animal welfare.	T1:C1: The living environment of the birds
	T1:C2: The treatment of the birds
	T1:C3: The lifespan of the birds
	T1:C4: What the birds are given to eat and drink
	T1:C5: The manner in which birds are prepared and transported for slaughter
Theme description	**What the theme is not**
• Free range chicken production involves an animal husbandry practice, with a specific focus on the treatment of the animal. Therefore, how the birds are reared or how people speak about their expectations of how birds ought to be reared earmarks this theme.	• This theme is not about testing welfare against any other external reference of animal welfare, such as laws or regulations, unless such laws or regulations were referenced as forming part of that specific practice.

4.2.1. Theme 1, Category 1: The living environment of the birds

"Access to the outside" (Chef 1, 2017; Farmer 3, 2017; Farmer 4, 2017; Farmer 6, 2017; Regulator 3, 2017; Regulator 4, 2017; Retailer 2, 2017) or access to some sort of "natural habitat" (Farmer 1, 2017) was a requirement mentioned by an overwhelming number of participants. This was mostly described as the "freedom to move" (Chef 1, 2017; Retailer 4, 2017) or "freedom to roam" (Chef 3, 2017; Farmer 2, 2017). Freedom was explained along with specific requirements for the built housing structures that would allow outside access, thus enabling such roaming activities. The descriptions of structures included pop holes that were big enough and opened daily, large barn doors that were opened during the day, or structures that had a permanent opening for birds to come and go as they pleased. Only one farmer, Farmer 5, had permanent housing structures with chicken wire on all four sides and he moved his housing daily. Most of the descriptions also included provision for natural light and fresh air, although some had electrical or gas equipment to regulate temperature when the weather was not favourable. Some of these practices can be seen in photos 1–5.

Outside access appeared to be mostly practised after two or three weeks of inside rearing; Regulator 5 said, "you can't have these little chicks outside when they are so tiny." The birds would be taken outside when they were old enough to endure the potential natural challenges that outside roaming presents, such as weather conditions and predators. Predators include "large birds" (Farmer 5, 2017) and "rats" (Farmer 2, 2017), although Farmer 4 (2017) maintained that "rats are a hygiene issue and not a predator issue". Artificial shading structures or sufficient bush or trees (natural shading structures), to ensure that the birds have the necessary protection whilst they are outside, were then also a requirement for some study participants. Regulator 1 (2017) maintained that the chicken's genetic heritage – the South East Asian junglefowl – demanded shady environments to thrive. Retailer 2 (2017) claimed that a season-sensitive approach to chicken rearing was important, as chicks left outside in the winter would be poor animal welfare practices.

Hygiene was also generally raised as an important requirement for the living arrangements of the birds. According to Farmer 3 (2017) most of the formal regulation for food safety governs the hygiene of the abattoir but not necessarily the barn where the chickens are raised. However, hygiene in the barn area, was exactly what most farmers were concerned about. In fact, it was their primary concern when describing free range chicken production, since poor hygiene could lead to illness and the death of birds. Farmer 3 (2017) said that high death rates could result in business failure; other farmers also stressed the importance of low death rates. Farmer 3 (2017) further stressed that "medication is also expensive", so practising good hygiene saved money. According to Farmer 4 (2017) one of the ways to manage hygiene was through lower stocking densities: "with high stocking density you get serious ammonia build-up on the ground, because the faeces are thicker and there are more [birds] in a smaller area." According to Farmer 4 (2017) an antibiotic-free system (as indicated in the next category) would also require lower stocking densities to ensure the animals remained healthy. Healthy animals mean lower death rates, which has a direct financial benefit. Death rates are discussed in more detail in category 2 and 5 of this theme. I found that the general consensus among participants was that lower stocking densities was especially associated with free range chicken production, yet from the case study data it was not always clear whether a concern for animal welfare only underpinned their beliefs about stocking densities; some of the evidence suggests it was also financially motivated.

Two farmers (Farmer 3, 2017; Farmer 5, 2017), two chefs (Chef 1, 2017, Chef 2, 2017) and one regulator (Regulator 1, 2017) highlighted the importance of healthy soil, with the farmers connecting this to hygiene management. For this reason, Farmer 5 (2017) moved his chicken housing often to minimise the risk of parasite build-up.

The living environment was also described along with access to water and feed. I observed at all farms that feed and water was constantly available inside the barns or inside the built structures where the birds lived. Farmer 1 (2017), Farmer 6 (2017), and Retailer 2 (2017) stressed the importance of constant access to clean, temperature controlled water. They regarded this as good for the birds and therefore good animal welfare. From my observation, Farmer 4 was the only farmer who had an automated mechanical feeding system; everyone else fed their birds manually. The quality of the

feed was also stressed, but this issue forms part of category 4: what the birds are given to eat.

4.2.2. Theme 1, Category 2: The treatment of the bird

Many participants described a free range chicken as a happy chicken or a stress-free chicken. Farmer 4 (2017) said that stressed birds were associated with birds pushed for growth, high stocking densities and a lack of natural light and fresh air. The farmers, in particular, described stress as a death sentence since stress led to weak immune systems and eventually to sick birds. How stress was measured, however, was not clear. Regulator 1 (2017) argued that "some of the measures used to determine stress are in themselves not sufficient."

The treatment of free range birds is also often associated with having healthy birds – this is a sign of good treatment. For most of the study participants the description of free range chicken included the health of birds, and there was a particular focus on not using antibiotics. Medicating birds was therefore not the primary means of keeping birds healthy. Farmer 3 (2017) claimed that he used effective micro-organisms (EM) in his water as a probiotic to strengthen the birds' guts. He said healthy guts resulted in healthy birds. Low stocking densities and hygiene management was again mentioned as a general strategy employed in keeping birds healthy. Most participants felt that their birds were healthy when they had low death rates, but Farmer 1 (2017) said that he often tested his chicken's bone marrow to measure the health of his birds. Based on the results of his bone marrow tests, he claimed to have had the healthiest birds in the country. Farmer 4 (2017), in contrast, vaccinated his birds; this, he maintained helped to build a stronger immune system. Farmer 2 (2017) and Farmer 4 (2017) admitted that they would use antibiotics if the birds got sick since they regarded this as good welfare. Farmer 4 (2017) also maintained that the administration of antibiotics for sick birds was good welfare practice, yet he claimed that the use of antibiotics had not been necessary on his farms in years.

Allowing the birds to practise their natural behaviour was also part of the treatment requirements for many participants. This included allowing birds to live naturally,

which included being able to go outside. Some farmers reported that they do not need to chase their chickens out of the barns as they would go out of their own accord in the mornings. Farmer 3 (2017) said the chickens would walk about when it was cool, but they preferred to stay close to their food. This appeared to be a comment made by many participants. In contrast to such comments, Regulator 4 (2017), argued that birds do not go outside naturally as they prefer to stay close to their food, and would therefore challenge farmers to move their food outside to encourage roaming. During my farm visits I observed that birds stay close to their food, and when outside they were in shady areas Retailer 1 (2017) said they used the Five Freedoms to determine the treatment of their birds, which includes the freedom to express normal behaviour. Regulator 5 (2017) opposed the notion of using the Five Freedoms to determine the treatment of birds, stating that they were insufficient and "guidelines for the uninformed." Regulator 5 (2017) argued that "the whole world is now moving towards needs" and so maintains that only considering general animal freedoms was insufficient, since each animals' needs and natural behaviour were different. Regulator 1, in contrast, challenged the idea that natural was better, saying: "the more natural the life, the more resources are used."

Some participants avoided describing the specifics of free range bird treatment (as listed above) and opted instead for more altruistic descriptions such as treating animals with "respect" (Chef 1, 2017; Chef 2, 2017). Chef 2 (2017) explained the importance of respect: "it's the ethics of being treated with respect, and I always feel that if you can treat animals with respect, hopefully humans will treat each other a little bit better as well." Others plainly described free range bird treatment under an umbrella phrase of "good animal welfare". What was meant by "good animal welfare" was not always explicitly stated. Some participants used the phrase "animal welfare" in the same breath as "raised humanely", "not hurting the birds", "not caged", "good standards", "animal needs" and "a decent life". Regulator 5 (2017) did however, argue that "scientists are looking at the needs of the individual animal species, so needs is going to be new thing."

Two participants strongly felt that animal welfare and human health were linked. Regulator 4 also said that "recently there was a paper written by over 200 scientists, to the World Health Organisation, basically saying that the organisation should look at

factory farming that is detrimental to human health. So we need to start linking this animal welfare abuse, the lack of animal welfare, to human health, and that's where you are going to bring around more meaningful change." Human health is discussed in more detail in theme 2, under the quality of meat.

Regulator 5 (2017) indicated that in the past it was politically incorrect to talk about animal welfare when there was so much human suffering but affirmed that they felt this hurdle had now been overcome. Regulator 5 (2017) also celebrated the South African Constitutional Court's reminder that animals are sentient beings, during the NSPCA hearing, which ruled that the NSPCA is allowed to individually prosecute on matters of animal cruelty; this, he said, was a "big win" for animal welfare protection.

4.2.3. Theme 1, Category 3: The lifespan of the birds

Longer rearing times, and as a result bigger birds, were typically associated with free range chicken production and was perceived as a form of better treatment or improved welfare. It was argued by the study participants that the birds were given more time to grow naturally, instead of being pushed for growth. Farmer 4 (2017) describes pushed for growth as birds kept in barns that are lit for 24 hours a day so that the birds are continuously eating; this practice also includes antibiotics in the feed to keep birds healthy or to promote growth. Despite the farmers all listing longer rearing times as a free range characteristic and therefore a form of animal welfare, their birds did not all have the same slaughter age. The majority of farmers allowed their chickens to grow up to six weeks (commercial broilers are slaughtered at about 5 weeks). Table 5 details the slaughter age and weight of the free range chickens of all famers interviewed. Retailer 3 (2017) and Retailer 4 (2017) acceded that longer rearing times were more humane. Retailer 3 (2017) said their chickens were slaughtered two weeks later than "a battery chicken". Retailer 4 (2017) was not sure of slaughter age – he suggested that it might be 16 weeks – but he did specify the slaughter weight as ranging between 1.8 kilograms and 2.5 kilograms. For Retailer 2 (2017) slaughter depended on weight; he did not specify the age of the bird at slaughter weight since he said this would differ in winter and summer. Retailer 3 (2017) asserted that retailers did not want the birds "to grow over 1 kilogram or 1,2 kilograms, otherwise they

won't make money", since consumers were conditioned to pay a certain amount for a bird and did not really look at weight. Farmer 3 (2017) also mentioned this as a hurdle in converting customers to free range products. Retailer 3 (2017) criticised other retailers' rearing approach by arguing that "chicken is like a fish, when you put a fish in a small pond, it will grow that size, if you put it in a big pond it will grow bigger," and so the reason why commercial chickens were put in densely populated barns was to keep them small. Regulator 5 (2017), however, indicated that the broiler breeds of today have been "selectively bred" to grow quicker and therefore questioned whether rearing times really made a difference. Table 6 displays the size of chickens and age of slaughter for each farmer interviewed.

Table 6: Free range broiler size and weight at slaughter

Farmer name	Age of slaughter	Size at slaughter
Farmer 1	5 to 6 weeks	About 2.2 kilograms
Farmer 2	8 to 12 weeks	About 2 to 3 kilograms
Farmer 3	6 to 7 weeks	About 1.98 kilograms
Farmer 4	6 to 6,5 weeks	About 1.8 kilograms
Farmer 5	6 to 6,5 weeks	About 1.6 to 2 kilograms
Farmer 6	6 weeks	About 1.8 kilograms

4.2.4. Theme 1, Category 4: What the birds are given to eat

Attention to the chickens' diet was a large focus in the explanations of free range chicken given by participants. References to diet was also often associated with views on good welfare. The comments regarding diet focused mainly on feed, which was "antibiotics free" (Farmer 2, 2017; Farmer 3, 2017; Farmer 4, 2017; Farmer 5, 2017; Farmer 6, 2017; Chef 2, 2017), "hormone free" (Farmer 2, 2017; Chef 3, 2017; Chef 4, 2017; Retailer 4, 2017), "growth promoter free" (Chef 2, 2017; Chef 3, 2017) and with "no animal by-products" (Farmer 4; Retailer 2), including constant access to fresh water. Many also stressed the importance of access to fresh pasture and bugs.

The majority of farmers interviewed bought their feed supplement from commercial suppliers such as Epol. This, they claimed, was feed specifically produced for free range chickens, thus containing no antibiotics or growth promoters. Although it would

be genetically modified. A phone conversation with the Epol suppliers confirmed that free range chicken feed was antibiotic free and they referred to it as a higher specification feed, which meant it was a feed product with better nutrients compared to non-free range feed. Two farmers used the word "quality" to describe their feed choice, with Farmer 1 (2017) specifying that it had "no chemicals". Farmer 5 (2017) said that free range birds should get biodynamic or organic feed since it was healthier, but admitted that there was little to no biodynamic feed available in the world and that organic feed was scarce in South Africa. Because of this he used GMO-free feed – there are only a few farmers growing GMO-free maize in South Africa – and he ensured that his chickens had access to fresh pasture. Farmer 5 (2017) maintained that one of the greatest challenges to growing healthy meat was in fact poor feed choices. The participants who specified the protein source in their feed, said they used soy, which for them was better than animal by-products. However, none of the participants (except for one) showed concern for the environmental impact of soy production. Neither did they show concern for the long travel distances (to get from the plantation to their feed cribs) and the consequent environmental impact implied when choosing feed, which is not produced in South Africa, such as feed supplied by Epol. Retailer 2 (2017) said that they had started working with the *Round Table for Sustainable Soy* to investigate how they could minimise their impact and Farmer 6 (2017) said he was investigating a cricket farming solution for their protein supplement needs. Farmer 2 (2017) was of the opinion that considerations for organic feed would mean importing feed, although this concern was less related to travel distance and more related to cost. One regulator and one retailer (Retailer 2, 2017) mentioned that free range production would require more water and feed due to longer rearing times, which would also impact on the environment. Regulator 1 (2017) maintained that there was "a fundamental disconnect" between good animal welfare and reduced environmental pressure: "the more intensive the agriculture the less environmental harm." Regulator 1 (2017) also challenged the idea that natural was better, by saying: "the more natural the life, the more resources are used."

The participants were almost unanimous on the issue of not using routine antibiotics. Regulator 1 (2017), however, argued that "you can only use less antibiotics if you can change the way you farm. So you can't just stop using them, because then it's a welfare problem, because the animals will suffer." Regulator 3 (2017) also pointed

out that free range producers proclaimed antibiotic free production, when "free range" technically only meant "to walk outside, freely." The issue of hormones was a bit more contentious, with participants exhibiting divergent views. Farmer 4 (2017), Regulator 1 (2017) and Regulator 3 (2017) said that the adding of hormones to chicken was a myth. Farmer 4 (2017) stated: "if anybody tells you that their chickens are hormone free, you can laugh at them, because chickens don't have hormones, so you can't give them hormones to grow." Regulator 3 (2017), conversely, pointed out that even though "chickens [do] have hormones, just like [people], oestrogen, progestogen and progesterone … It's just not used since it has to be injected," which is apparently a time-consuming and costly exercise. Regulator 1 (2017) said, "there are no added hormones in any chicken – period." Regulator 4's (2017) opinion was opposed to all these views. He stated: "there are growth hormones in the [commercial chicken] feed, which the industry completely denies."

The phrase "growth promoter" also inspired opposing views. Some participants, such as Farmer 4 (2017), spoke of antibiotics as a growth promoter, while others, such as Regulator 4 (2017), believed that hormones were used to promote the chickens' growth.

4.2.5. Theme 1, Category 5: The manner in which birds are prepared and transported for slaughter

For certain participants getting the birds from the barns into crates, onto trucks and to the abattoir formed an important part of determining whether chickens were free range. Farmer 4 (2017) specifically spoke about this, sharing that he had a method of catching the birds quietly, the evening before slaughter. He also had protocols for the packing density (this refers to packing the birds in crates for transport to the abattoirs), which differed in winter and summer. Farmer 4 (2017) stated that their birds "do not travel more than 100 kilometres" to slaughter, otherwise it was inhumane. Some of the chefs also raised concerns about long distance travel that put stress on the animal, since this impacted on the quality of meat they received; the meat of an animal that had endured stress was described as tougher. Whether free range chicken warranted shorter travelling time in general was not clear for the chefs.

At the time of the interviews Farmer 6 (2017) struggled with an ethical dilemma of accepting a large order in Pretoria that would boost his business but would imply travel time of almost 1400 kilometres before slaughter; the order specified that the chickens needed to arrive in Pretoria alive. Most participants blamed the challenges associated with more humane travel distances on a lack of proper abattoirs in South Africa, especially abattoirs that had a good ethos – a requirement they argued was a necessity for free range chicken. Farmer 6 (2017) said the ethos for him was about the way the abattoir removes the chickens from the crates: "they grab them at their wings." The lack of abattoirs meant that some farmers had their own. Farmer 2 (2017) had a rural abattoir license, which meant he could slaughter 50 chickens a day, Farmer 3 (2017) had a low throughput licence, which allowed them to slaughter up to 500 per day, and Farmer 4 (2017) had a full commercial license that enabled the slaughter of up to 16 000 chickens a day. Due to high demand, Farmer 2 (2017) still outsourced some of his slaughtering. Farmer 6 (2017) said that he was also looking into building his own abattoir so that he could have full control over his product. Farmer 5 (2017) said that government should investigate mobile abattoirs so that all small scale producers would have access to proper slaughtering facilities.

4.3. Theme 2: Free range means quality meat

This theme was focused on the food product, chicken meat, so referred to the animal after slaughter. Because this was a topic about food, in this case chicken meat, everyone spoke about the meat and its qualities for consumption purposes. While this theme was solely about the meat product, the previous theme, how the chicken was reared, would weave into the understanding of the quality of the meat.

Better quality was described in various ways, either by referring to its taste profile or what it looked like, its nutritional aspects (that it is healthier for humans to consume and that no antibiotics or hormones are added) and its higher cost (quality is associated with a higher price). There were thus two main categories (refer to table 7) in this theme, i) the quality of the meat and ii) the price of the meat.

Table 7: Theme 2: Free range means quality meat

Theme name	**Category names**
T2: Free range means quality meat	T2:C1: The quality of the meat
	T2:C2: The price of the meat
Theme description	**What the theme is not**
• This is a topic about food, in this case chicken meat, so everyone speaks about the meat – that is, the bird after slaughter – for consumption purposes. While this theme is solely about the meat, how the chicken was reared will impact the quality of the meat (mostly referring to the chicken's diet and stress levels).	• This theme is not about the farming practices of rearing free range chicken that are addressed in theme 1. However, issues relating to farming practices are raised, such as antibiotics or hormones in the meat. This will be discussed in the context of the quality of the meat and not in the context of the health or quality of life for the bird. • The price of quality meat will not be a discussion about the cost of running a free range business as this is included in the next theme.

4.3.1. Theme 2, Category 1: The quality of the meat

When participants described free range chicken meat they generally did so with positive references to its taste profile and its health benefits.

The farmers and especially the chefs, described it as superior tasting meat, with a better and sometimes denser texture. Farmer 2 (2017) said, "it tastes better [and] you feel better eating", while Farmer 4 (2017) asserted that his chicken was "unmistakably better tasting". Chef 1 (2017) shared a story of blind tastings he had done, where free range always ranked the tastiest. Chef 2 (2017) said that one could see the difference in the meat, and therefore determine the taste, by just looking at what he called the "flavour profile" of the meat. Chef 3 (2017) said free range "tastes unbelievably better", although the meat is denser because it is a "farm chicken".

Three participants specifically noted that since free range chicken was not injected with brine, consumers got more meat for their money – pointing out the quantity and quality attributes of free range chicken. Retailer 2 (2017) described free range chicken simply as a "better quality meat". Farmer 6 (2017) said he also believed that he produced "better quality" meat.

All participants spoke about the health benefits of consuming free range chicken, with one or two challenging the notion of it being healthier than conventionally reared chicken. It is worth noting, as a precursor, that Regulator 1 (2017) and Regulator 2 (2017) felt that animal protein was essential to the human diet regardless of the rearing method, with Regulator 1 (2017) further asserting that only animal protein, specifically meat, can provide certain essential amino acids, which are beneficial for brain development and other areas of human performance.

Free range meat was portrayed by many of the participants as a healthier meat choice, with some saying free range meat had more meat and less fat. The greatest health benefit communicated was that free range chicken was antibiotic free; Farmer 4 (2017) said that antibiotic use would lead to antibiotic resistance in humans. In fact, many participants felt that antibiotics was a pharmaceutical that was abused by the industry. Of great concern to Farmer 5 (2017) was the fact that "90 percent of the antibiotics issued in South Africa were issued in confinement animal feeding operations." Many of the participants argued that human antibiotic resistance, associated with eating commercial chicken meat, was something that would not develop in people who ate free range chicken meat. Regulator 4 also said that "recently there was a paper written by over 200 scientists, to the World Health Organisation, basically saying that the organisation should look at factory farming that is detrimental to human health. So we need to start linking this animal welfare abuse, the lack of animal welfare, to human health, and that's where you are going to bring around more meaningful change."

Some participants included "hormone free" as a benefit of free range chicken, although the notion of using hormones in chicken production at all was challenged by some farmers and regulators (see category 4 of theme 1 discussed above). With regards to hormone use in chicken, Regulator 5 (2017) expressed specific concern about the effect of commercial chicken on human hormones, stating: "whenever I see man boobs now, I think of chicken." Retailer 4 (2017) linked his belief in free range chicken as the healthier option to his belief that commercial production was responsible for causing certain cancers. In contrast to the majority's view that free range chicken was healthier, Regulator 1 (2017) entirely rejected the notion, stating;

"I have to unfortunately say, at best free range meat and eggs will be as healthy as conventional – at best – they can never be healthier."

4.3.2. Theme 2, Category 2: The price of the meat

For most of the participants, price was an indicator of quality and therefore a guide for assessing whether chicken meat was really free range. Chef 1 (2017) indicated that one of the ways in which he determined whether the product was really free range was by looking at the price, since he knew what it took to grow real free range chickens. Chef 3 (2017) says they accept that "free is range is expensive … because it's expensive to do things properly."

Free range chicken was also described as a niche market and as an expensive product that only a few – even among those who were privileged – could afford and access. Retailer 1 (2017) said that they sell their free range at a "premium", and Regulator 1 (2017) argued that free range meat was for an income category that did not consider price when they made decisions about food. Chef 1 (2017) contended that free range meat was more expensive because it was a niche business and there was "not enough [free range] available". This comment illustrates an interesting supply-demand tension that appears to be influencing the cost of free range meat.

Retailer 2 (2017) asserted that people felt they got more value for money and were therefore willing to pay more for free range chicken – another positive reference to the quality of free range meat. Retailer 3 (2017) argued that "the only way [that] you can really differentiate … a free range chicken [from] a normal chicken, is [the] price." In the same breath Retailer 3 (2017) argued that his free range chicken was of superior quality and that the price indicated that. Farmer 6 (2016) also maintained that producing a better quality chicken cost money, and therefore price was a good indicator of quality. Farmer 6 (2017) expressed concern over the fact that larger farmers sold their free range chicken at unrealistically low prices, which he felt distorted the value of the product. Regulator 1 (2017), in contrast to all the other participants' comments, asserted that price was not about quality, but about "free

range and even more [so] organic, … [being] less efficient", and therefore more expensive.

4.4. Theme 3: Free range means a profitable business

This theme described free range chicken as being a commercial undertaking, thus free range chicken being about business. Everyone mentioned in one way or another that it was a business, that it had to make money, or that it had to make commercial sense to practise free range chicken farming. The commercial viability, including the challenges to make it viable, then determined how the chickens would be reared and therefore how free range was viewed and defined. There were three categories in this theme (detailed in table 8); i) free range as a business opportunity, ii) the cost of rearing chicken and iii) the market pressures.

Table 8: Theme 3: Free range means a profitable business

Theme name	**Category names**
T3: Free range means a profitable business	T3:C1: It's a business opportunity
	T3:C2: Cost of rearing chicken
	T3:C3: Market pressures
Theme description	**What the theme is not**
● This theme talks about free range chicken production as being a commercial undertaking – everyone mentions in one way or another that it is a business or that is must make money or make commercial sense. The commercial viability determines how the chickens are reared and therefore how free range is defined.	● This theme is not about the political, social or ecological aspects of free range. It is purely about the economic factors, and what the aforementioned aspects mean in an economic sense.

4.4.1. Theme 3, Category 1: It's a business opportunity

This category described the positive attributes of free range chicken as a commercial enterprise, including the elements that described what made free range a successful business. It was associated with words and phrases like "opportunity", "there's a demand for it", "it's a niche market" and "people are willing to pay for quality". Some participants even went as far as saying that they produced "real free range", yet,

when speaking about others practising free range farming, it was discussed in a more negative light, insinuating that people practised free range as a marketing ploy or did it just to make money. I detail some of these responses below.

All participants trading in free range chicken reported that their businesses were doing well, with some labelling it as successful, except for Farmer 1 (2017), who closed down his business a few months before the interview. Although Farmer 1 (2017) wasn't explicit about the reasons for closing the business it appeared to be two-fold, firstly as a result of his wife's illness – he wanted to focus on looking after her – and secondly because he was losing money.

Most farmers and retailers started out small and grew because of an increased demand for free range – Retailer 2 (2017) even admitted that "we can't keep up with the demand." Chef 2 (2017) said about his operation, "[it] has grown far bigger than they ever imagined" and Retailer 2 (2017) shared that "free range has completely surpassed our other sales, because it's a better product." In order to keep up with the demand, Farmer 4 (2017) outsourced his chicken rearing, which allowed for larger production numbers[8].

Making money seemed to be an important consideration for most participants. For example, Farmer 1 (2017) said a primary consideration for him was to "build a viable business" and Farmer 6 (2017) maintained that "no one wants to farm at a loss". Farmer 3 (2017) said they initially under charged, but later realised they had a good product, and "people are willing to pay for quality", so they have since adjusted their prices. They now felt that they were doing well. The sustainability of farming practices or retail businesses were also mostly described as economically sustainable. Specific figures related to revenue and profits were not asked for and therefore not shared. However, some farmers did share their setup cost, although these businesses were not all the same size, making such data difficult to compare and not very useful.

[8] Farmer 4 has stopped rearing chicken himself. He now outsources to seven contract growers who are all situated less than a 100 kilometres from his abattoir. Farmer 4 now instead manages the business and runs the abattoir where the chickens are slaughtered, and the meat is processed and packed.

The business model also formed an important part of how participants described their commercial entity. Farmer 4 (2017) controlled his entire value chain, from breeding to farming, to slaughter and processing, to distribution and retail. Farmer 4 (2017) also sold to other large retailers. Chef 2 (2017) said he raised and processed most of his own meat, and only outsourced the slaughter of the animals. This way he could control the quality of the products he sold. Farmer 1 (2017), Farmer 2 (2017) and Farmer 3 (2017) also slaughtered their own birds to control quality, which in turn impacted on the selling price of their products. Retailer 2 (2017) was explicit about his support of ethical farming, which he felt spoke to a specific type of consumer, which was also a higher income customer. Quality control was therefore part and parcel of the free range business model.

Although everyone who did free range farming commercially (all participants, excluding some regulators) had positive descriptions of their own businesses, they expressed negativity towards others in the industry. They described others' efforts to make money as problematic. Farmer 4 (2016), for example, maintained that "everybody else that does free range does hundreds of thousands of commercial birds – they see a gap in the market, so they do token free range and they use it as marketing tools"; he also called these farmers "pseudo free range". Farmer 5 (2017) asserted that "the 'free range' term has been abused by the industry and by retail" and maintained that "people are under the illusion that when they buy a free range product, that it is actually free range," which Farmer 5 (2017) felt was "a blatant lie." Farmer 1 (2017) argued that "to describe a natural chicken, in its natural habitat, that hasn't been tainted by our modern lifestyle, … [is] commercial nonsense"; despite this comment Farmer 1 labelled his product as free range. Farmer 2 (2017) also felt that "many free range chickens from those big suppliers are not always really free range." Regulator 3 (2017) contended that "it's a marketing strategy"; he consults to many broiler farmers (both conventional and free range) and argued that many farms put the "free range" on their labels, yet he was familiar with their practices and did not consider them to be free range. Regulator 4 (2017) strongly believed that "retailers use misleading claims to proclaim free range, which isn't necessarily free range, it's actually barn raised, which they were … [doing] anyway. [Retailers] are claiming something that is already in effect [and] they are charging premiums … for something that is just a normal method of production."

4.4.2. Theme 3, Category 2: The cost of rearing chicken

The cost of rearing chicken came through strongly in comments from participants when they explained the business of free range production and in a sense they were justifying why it cost more than commercially produced chicken meat. Many reasons were put forward for free range chicken being more expensive, such as "it is less efficient", "the production costs are higher", "the market is smaller", "free range chicken takes longer to rear", "it uses more water and food", and "free range needs more space". Farmer 1 (2017), for example claimed that they spent "R34 million" on his business endeavour, with a large portion of it spent on "research". The period over which this money was spent was not specified. Chef 3 (2017) believed that doing free range farming properly was more expensive. Some farmers also had their own abattoirs (Famer 1, 2017; Farmer 2, 2017; Farmer 3, 2017; Farmer 4, 2017) and shared that setting this up was costly, although they pointed out that it would save money in the long term (Farmer 3, 2017).

Since the cost of free range production evidently impacted on the selling price of the product and therefore whether people would purchase the product, it was an important business consideration. Free range chicken was therefore described by some as a food choice for wealthy people (Chef 1, 2017; Regulator 1, 2017; Regulator 2, 2017). Farmer 3 (2017) described the specific cost-profit challenge by saying that "chicken sold in retail stores are about Rands and Cents" and customers would "rather purchase a R70 chicken than a R90 chicken." They therefore needed to carefully consider how long to rear their birds since firstly, every week impacted on cost per kilogram, and secondly, the size of the chicken in terms of total rand value per bird mattered to consumers. In the same vein, Farmer 3 (2017) claimed that "people complain to them about [supermarket] chickens getting smaller." Retailer 3 shared similar views about the price hurdle: "[people] go to Checkers and buy a chicken … [for] R45 or R55 and then they come to the market and see a chicken for R125. And they say, are you mad!" Retailer 3 (2017) said that that was the first hurdle he had to overcome in converting customers to free range chicken.

One of the greatest cost considerations was feed (Farmer 1, 2017; Farmer 3, 2017; Farmer 6, 2017; Retailer 3, 2017). How long the birds were reared therefore also determined what was spent on feed. Farmer 1 (2017) said that "when you start moving towards the six weeks' period, [it is] just costing more money, because you're feeding them more." This tension was also highlighted by Farmer 3 (2017) (above) and Retailer 2 (2017) (above). As indicated above, although free range farming was considered a practice that reared birds for longer, the case study showed that most farmers only kept their birds a week longer than conventional growers, and this appears to be as result of a cost consideration.

In addition to concerns about high costs, some participants expressed anxiety about unrealistically reducing the selling prices for free range chicken. The supermarket strategy, for example, for reducing free range chicken was said to create problems for smaller producers and suppliers. Farmer 6 (2017) also said that bigger farmers "are destroying the market at those prices, because that is not the real value of free range chicken." Price is so deeply embedded in the definition of free range chicken that one chef even questioned the validity of free range chicken if the prices were too low. Farmer 4 (2017) shared a more optimistic view stating, "I would like to prove […] that I can produce chicken in a very ethical manner, that's not too expensive." This, he said, would be his dream.

4.4.3. Theme 3, Category 3: The market pressures

The free range business was described within a system that put pressure on suppliers. This ranged from issues relating to a lack of transparency, poor treatment of suppliers, the challenges of institutional perception as well as broader trade and socio-economic pressures.

Chefs were particularly concerned about knowing the source of their meat, their farmer. Most of them said that they had experienced people lying to them, which in turn has made it difficult for them to cook with integrity. Examples of the awareness of such deceit are Chef 1's (2017) comment: "anything can be put on a label," and Chef 2's (2017) comment (in reference to a supplier): "I don't talk to the women

[anymore], since I discovered it was all a lie." Retailer 3 (2017) also felt that "on poultry they can say anything." This concern over a lack of transparency came with a strong sense of wanting the industry to be regulated (to be discussed in theme 5). Regarding this, Regulator 3 (2017) said, "I feel strongly [that free range chicken production] should be regulated." Farmer 3 (2017) also shared that they often asked the question "is this really free range?".

Market pressure also presented itself in the form of institutional pressures. Chefs, for example, had to manage up, meaning they had to make sure that restaurant, hotel and estate owners bought into their vision of sustainable cooking. Chef 1 (2017) admitted that this was a long process: "it takes time". Similarly, retailer employees who were committed to sustainability had to deal with decision makers who prioritised profit over sustainability. In line with this, Retailer 2 (2017) admitted that it was difficult to get everyone in his institution on board; he conveyed an example of convincing buyers in his retail group to purchase from farms with more sustainable practices, yet these might be a bit more expensive, and so price would often be chosen over principle.

These market pressures, including a rise in the demand for free range chicken, have resulted in more pressure to find enough suitable suppliers. For example, Retailer 3 (2017) asserted that they had personal relationships with their suppliers and had visited their farms. However, the retailer-supplier relationship was not always described in such favourable terms. Regulator 5 (2017) described retailers as "not having a heart" and Farmer 5 (2017) passionately contended that "the retailer's business model is predicated on fucking the supplier; and the bigger [they] are, the more national [they] are, the meaner and horrible [they] are." The larger retailers, in contrast, all claimed to value their suppliers, with Retailer 1 (2017) declaring, they "establish and maintain efficient and fair business practices for … mutual benefit." Retailer 2 (2017) also claimed that they did "ethical sourcing [by working] together with [their] suppliers."

Larger system issues, such as national politics (unstable local politics, which lead to unstable local markets and affects the strength of local currency) and international trade (including chicken dumping), were also mentioned as general market pressures

in the chicken industry, yet little mention was made of them in relation to free range chicken. Chicken was, however, spoken of in terms of feeding the nation and therefore some focused on its role in ensuring food security, especially for the greater population. Regulator 1 (2017) dismissed free range chicken as a food source that ensured food security in a constrained economy in the developing world. Regulator 2 (2017) argued that mass market, "the lower LSM, do not ask where their chicken comes from", and there did not see a role for it in feeding the less fortunate. Chef 2 (2017), however felt that "our government hasn't done much to bring about healthy eating amongst our population." These views evidently impact on the significance of free range chicken and on sector growth.

In conclusion to this theme a strong sense of critique was expressed against the larger food system, with a specific focus on large retailers. I felt this indirectly pointed to market pressures that those who bring free range chicken to the market experience. Regulator 4 (2017) maintained that "[o]ur entire food chain is controlled by the retailers, even to the point of what is grown and when it is grown." This control also means that they determine price: "[the] supermarket wants to move volume at low cost, high profits, which means they have to buy in at a cheap price" and so supplying to large retail would imply practices that allow for such low prices. Some said that this system required a tougher and faster growing breed, which helped to cut costs. Farmer 5 (2017), however, felt that the corporate retailer's view of costs was a "myopic view of economics, [because it doesn't account for] true cost accounting." Nonetheless, to get access to big markets it was believed that farmers should aspire to do business with big retailers; such aspirations were seen with Farmer 6 (2017), indicating he would like to get his practices in order so that Retailer 2 would secure him as a supplier. Regulator 5 (2017) said that retailers had so much power that they were even able to make Farmer 5 remove the name "truly free range" from their free range eggs.

These critical comments illustrated that this in a sense speaks about *who determines free range.* The critique discussed above is highlighted to illustrate the pressure experienced by those who bring free range chicken to the market, and so is not duplicative of the next theme, focusing on who holds the power.

4.5. Theme 4: Free range is determined by decision makers or by access to markets

This theme mainly spoke about *who* would decide what free range chicken was in a trade relationship. Since free range production was not formally regulated by law (as revealed in the literature review), I found that access to a market would determine how free range chicken was defined and therefore how it was practised. Some created their own market and therefore had decision making power over their definition and practice, whereas certain other actors were forced to go look for access to the market through others and therefore depended on them to determine what free range chicken was. These dynamics played out differently in the four participant groups and therefore determined the categories that were selected for this theme (see table 9 for detail). These categories were i) retailer requirements and strategies, ii) farmer practices and strategies, iii) the head chef and restaurant profile, iv) perceived consumer requirements, v) activists' role in determining the system and vi) the lack of community unity.

Table 9: Theme 4: Free range is determined by decision makers or by access to markets

<table>
<tr><th>Theme name</th><th>Category names</th></tr>
<tr><td rowspan="6">T4: Free range is determined by access to the market or by the decision maker</td><td>T4:C1: Retailer requirements and strategies</td></tr>
<tr><td>T4:C2: Farmer practices and strategies</td></tr>
<tr><td>T4:C3: The head chef and restaurant profile</td></tr>
<tr><td>T4:C4: Perceived consumer requirements</td></tr>
<tr><td>T4:C5: Activists' role in determining the system</td></tr>
<tr><td>T4:C6: Lack of community</td></tr>
<tr><td>Theme description</td><td>What the theme is not</td></tr>
<tr><td>● This theme especially speaks about who will decide what free range chicken is in a trade relationship. Since it is not formally regulated by law (as revealed in the literature review), I found that access to a market will determine how free range is defined and therefore how it is practised.</td><td>● This theme is about relationships and decision-making power. It is not about the legal regulation (or lack thereof), so it is not to document the critique of the laws or guidelines for free range and animal husbandry in general.
● It is not about the business of free range as discussed in theme 3. Instead, it is about who determines where or how the business is conducted.</td></tr>
</table>

4.5.1. Theme 4, Category 1: Retailer requirements and strategies

Since retailers did not produce their own chicken, they were dependent on farmers. In most cases the retailers claimed they picked their farmers. Retailer 4 (2017) said he tried "to go to their farmers to see if the chickens are at least outside and to investigate where they sleep and if there's enough space; to see if [there is] a farm feeling." Retailer 3 (2017) affirmed his personal relationships with his two chicken suppliers and that he had also visited their farms. Retailer 2 (2017) shared, "we are involved with farmers" and that he hand-picked his farmers. Farm visits were therefore important to assess the chicken's health by "looking at their feathers" and seeing if they "have ammonia burns under their feet" (Retailer 2, 2017). Retailer 2 (2017) confidently shared, "if there is one thing we got right, it's the whole thing around free range eggs and chickens," referring to the checks they did at farms.

Both of the large retailers claimed to have company drafted protocols for free range chicken production that their farmers had to comply with in order to do business with them, and both indicated that they were guided by the Five Freedoms, with Retailer 1 also referencing their use of the GLOBALG.A.P. (Good Agricultural Practice) standard. GLOBALG.A.P. is an international certification for general good agricultural practices which include hygiene, workers' health and safety, general site management and product traceability; and an animal welfare add-on has also recently been released (GLOBALG.A.P. 2017). Retailer 2 (2017) said that due to the competitive nature of the industry he worked with existing farmers to get those protocols right. Access to these protocols were unfortunately denied by both large retailers. Retailer 1 (2017) said, "the protocol is confidential", while Retailer 2 (2017) regarded their protocol as "their competitive advantage", whilst mentioning that they have spent a lot of money researching and developing their protocols. How free range chicken was defined or specifically determined for these retailers was therefore not entirely clear.

4.5.2. Theme 4, Category 2: Farmer practices and strategies

Most farmers had a story about what motivated them to farm free range. Their story usually determined what free range chicken meant for them and how they practised it. Secondary to that, some farmers who sold (or wanted to sell) free range chicken to supermarkets had to adhere to the rules established in retailer protocols, at least to the extent to which these were enforced.

Farmer 1 (2017) lost both his wives to cancer. When Farmer 1's (2017) second wife started to become ill he "wanted to give back to society by growing a healthy chicken." Farmer 2's (2017) "love for animals" and his drive to "farm ethically" were his motivations for choosing to farm free range chicken. Farmer 4 (2017) said that he "started for home consumption, … appalled by the treatment of farm animals … and want[ing] to feed [his] children healthy, antibiotic free meat." Farmer 5 (2017), worked in the corporate sector, and was moved to start a regenerative farm after reading the *Omnivore's Dilemma* (Pollan, 2006), a popular book that problematised modern industrial farming and sought sustainable alternatives. In Farmer 5's (2017) opinion choosing to farm was the best way to positively contribute to the food system. Farmer 6 (2017) returned home after an auditing career in Pretoria and decided he "doesn't want to ever work for a boss again" and was therefore motivated to start his own business. Farmer 3 (2017) was also, initially, motivated by money. Each farmer clearly had different motivations and as a result they focused on different elements of free range farming – animal welfare, human health, environmental sustainability or a commercial venture.

Many of the farmers created their own markets or support for their products and thus had the ability to dictate their own definition of free range, instead of having to follow supermarket prescriptions. Farmer 2 (2017) has direct contact with his customers; he had a shop on the farm and also sold his products through an online platform. Farmer 3 (2017) sold at a farmers' market and provides meat products to other small retail outlets in their area; they said that these smaller outlets have not dictated their free range practices. Farmer 5 (2017) supplied to the hotel, restaurant and a small shop on his farm, and provided some products to other restaurants and hotels, including one

organic shop in the Western Cape. Farmer 4 (2017) is the only example in this sample of a farmer that has taken his concept of free range and developed it into an extensive protocol; he said he has spent a lot of time and money on developing theses protocols. In fact, Farmer 4 (2017) claims his protocol informed Retailer 2's free range protocol; due to the size of Farmer 4's production and being one of the first entrants in this sector, he was able to dictate how he prefers to produce for Retailer 2. Farmer 4 (2017) also sold his own brand of chicken in his own factory stores located across the Western Cape.

The farmers that sold to retailers reported that the retailers sometimes did farm visits. Farmer 2 (2017) and Farmer 3 (2017) mentioned that only one of the several smaller retailers they supplied had visited their farm, while the rest took their word that their chicken was free range. Farmer 3 (2017) contended that the retailer's visit was potentially more related to investigating "hygiene" factors and to confirm whether they could consistently supply volume, than free range farming as a practice. Farmer 6 (2017) also shared that their biggest client visited their farm at the start of their relationship and after that never again. Farmer 3 (2017), in contrast, said that their biggest shift in defining free range, moving away from antibiotic feeds, was driven by the small Saturday market retailer they supplied to; the supplier questioned whether they were truly free range.

Farmer 4 (2017), the largest farming practice interviewed, explicitly stated that he wrote his own production protocols to ensure that his defined free range farming requirements were standardised across his practice since he subcontracted his growing. He called this protocol his "free range farming protocol bible", claiming that he had "gone down to the nth degree" to ensure he had a good practice. Farmer 4 (2017) also said that no matter what retailer protocols were, he will always "stick to our standards". Farmer 4 (2017) shared that Retailer 2 had in fact, "taken my protocols to their other free range suppliers" and requested them to follow the same standards. Farmer 4 (2017) was the only farmer that mentioned such extensive documentation of protocols. The other farmers had procedures in place, but not protocols of this extent. Farmer 4 (2017), Retailer 1 (2017) and Retailer 2 (2017) all declared their protocols confidential. While Farmer 4 (2017) did allow me to read his protocol in his office, I was not permitted to make notes or to take photographs of

these documents. Farmer 4 (2017) was very proud of the work they had done in developing these extensive protocols, indicating that they had done wide-ranging research and travelled across the globe to see what other free range farmers were doing. Therefore, he regarded his protocols as his competitive advantage (the same as Retailer 2). In my interview with Regulator 3 (2017), a veterinary expert, I asked why protocols would be regarded as confidential to which he replied, "it is strange" and that he could not think of any reason why protocols should be kept confidential.

4.5.3. Theme 4, Category 3: The head chef and restaurant profile

All the chefs who participated in this study worked for high-end establishments. These chefs, according to my research, explicitly stated that they had a sustainable cooking or food philosophy, which included free range chicken as a menu item. These chefs all admitted that they had customers that were willing to pay more, although one chef said that some people still did not care where the food came from.

All chefs that participated in the study also said that they could determine the food philosophy in their establishment, despite not necessarily being the owner. Chef 1 (2017) plainly said he dictated the food philosophy, and Chef 2 (2017) said he determined what happens in the kitchen. Chef 3 (2017) also said what happens in the kitchen was his responsibility. Chef 4 (2017) was the only participant that owned his establishment, and therefore faced no obstacles in determining what was bought, cooked and sold.

All chefs felt that they were making a small positive difference in the food system, with a majority of them feeling that their contribution was driven by a personal responsibility. Therefore, they would not work for an establishment that did not share their values. All of them reported that since they established the restaurant's food philosophy, they therefore determined what free range chicken was and who they would purchase from.

4.5.4. Theme 4, Category 4: Perceived consumer requirements

Free range chicken was offered and, according to the retailers, sometimes defined based on perceived consumer needs and demands. I did not, however, interview consumers for this study and therefore cannot verify these needs.

Regulator 5 (2017) said that television programmes such as Carte Blanche and activity on social media had led to consumers being more aware of farm animal production and as a result they started asking more questions. Retailers and farmers attested to feeling this pressure and that they were often asked whether their chicken was real free range. Retailer 2 (2017) shared that comments by consumers on social media has kept them alert and in the spotlight, although sometimes it has shifted consumer's attention to something that is not necessarily true or important, yet they had to respond to these concerns. Retailer 2 (2017) said that they had a consumer pool that demanded transparency. Regulator 5 (2017) asserted that this kind of awareness was what changed an industry, using the egg industry as primary example; cage free started with a strong consumer movement on social media, which in turn had put pressure on egg producers and retailers to go cage free. Regulator 1 (2017) also referred to the cage free movement and stated that farmers were going cage free, although he was not convinced that farmers actually knew what consumers wanted.

Regulator 5 (2017) said that consumers needed to be educated on the fact the free range was not regulated. Retailer 3 (2017) contended that some consumers were ignorant, and Regulator 4 (2017) also felt that customers were not that well educated on matters of free range and therefore did not really determine what free range chicken was; they just believed what the retailers said. Chef 1 (2017) felt that more people now cared about where food came from, although this had not been his experience throughout. Regulator 4 (2017) said that compared to Europe "consumer education [in South Africa] is about 20 years behind." Chef 4 (2017) said that his nose to tail cooking has often resulted in customers asking for general meat cuts such as rumps, but this, he felt provided him with a "blank canvas" to educate customers on eating more sustainably; this included the option to try his 100-day old, free range chickens.

Chef 3 (2017) and Regulator 1 (2017) argued that lifestyle also determined people's view on food and therefore impacted on whether they even deemed free range as important. Regulator 1 (2017) also felt that urbanisation was responsible for "our disconnect from food".

The views among participants on consumers' role in establishing what free range chicken was, were clearly divided.

4.5.5. Theme 4, Category 5: Activists role in the determining the system

Regulators, especially activists or special interest groups, have been effective in determining free range chicken because they have had access to a market or a captive audience. The rise of cage free eggs was the result of a movement driven by young people who through their social media activity put pressure on producers and retailers.

Regulator 5 (2017) said that he had made big strides in consumer education, starting with children's education at school level. Regulator 5 (2017) was invited, with others, to contribute to the development of the National Curriculum and Assessment Policy Statement (CAPS), the South African school curriculum in 2001 and 2002. His contribution formed part of the environmental content which included animal welfare; this was not part of school curriculum in the past. CAPS was rolled out in 2012 and Regulator 5 (2017) then realised that schools do not have proper work books, so his organisation developed teacher guides and workbooks for children which they now sell. Regulator 5 (2017) has also produced a monthly educational magazine and were active on social media as part of their general animal welfare awareness. Regulator 5 (2017) said, "I think that we are totally responsible for the growth of awareness, it matches any other country, [for example] England and America."

Regulator 4 (2017) said that it was important to "keep small producers authentic" and he therefore operated in the regulation space to help them stay honest. For him this was extremely important, otherwise consumers would stop shopping ethically and go

back to the major retailers. It was also Regulator 4's (2017) motivation for being an active blogger to keep people informed.

Regulator 6 (2017), a well-known animal rights interest group, had been involved in law making processes to ensure farm animal production was conducted ethically. Regulator 6's (2017) decision to distance their organisation from the SAPA Code of Good Practice was also an indication of using his power to influence what free range is and what it is not.

4.5.6. Theme 4, Category 6: The lack of community

The lack of community and feeling of being alone in the free range endeavour, especially as expressed by the farmers, chefs and small retailers, emerged as a key category in this theme. Being cognisant of their lonesome (or independent) journey, it was important for these actors to have a strong strategy for access to market. Although the lack of community did not necessarily determine the definition of free range chicken, it did highlight how the lack of strength in unity divided the determination of what free range chicken was.

All participants were aware of other actors in this small sector, yet there was no indication of them working together or sharing learning with each other. Farmer 4 (2017) admitted that "it's a very competitive market" and says he "doesn't know [if] there's too much working together." Farmer 3 (2017) shared that their neighbours, the milk farmers, "have a study group that meets every two to three months" where they exchanged learning. Farmer 3 (2017) said that they wished there was something like that for chicken; they had considered approaching Farmer 2 to share ideas, but admitted to "indirectly … see[ing] them as competition." Farmer 6 (2017) expressed admiration for Farmer 4's success, but said he had not felt ready to speak to him and that he was scared that Farmer 4 would see him "as a threat". Despite the comments about their lonely journeys, most farmers claimed to have learnt from someone else in the industry. Farmer 6 (2017), in particular, followed Farmer 4 by watching his online videos.

The chefs spoke less about the broader community and focused more on their own kitchen. Chef 1 (2017) admitted that although he was "sometimes invited to [speak] to people" to "stand on their soapbox," he admitted that his influence was "limited". Chef 2 (2017) also mentioned that he had hosted Slow Food International when they visited South Africa, a duty fulfilled by "government officials" in other countries. However, he admitted that "[we] don't shout [sustainability] from the rooftops anymore, [we] don't think it's really necessary." Setting an example appears to happen in their own kitchens instead. Most feel that this was the best way to influence the community of sustainable chefs. This in turn would produce a community of chefs that would determine free range chicken or sustainable cooking practices in future.

The retailers, especially the large supermarket groups, did not speak about themselves as part of the free range community. They viewed themselves as independent and spoke about free range chicken as a product and people in the free range community as suppliers of their business needs.

Most regulators regarded themselves as industry watchdogs, with Regulator 4 (2017) expressing a desire to keep the sector "authentic". He therefore worked with farmers to improve free range practices whilst considering commercial viability.

4.6. Theme 5: Free range is coupled with concerns about the lack of regulation

There was an overwhelming concern expressed by almost all of the participants about the lack of regulation and its impact on the free range sector. These concerns were associated with the challenge of actually determining what free range chicken was. Free range chicken was therefore associated with mistrust of other stakeholders and self-doubt. This theme, illustrated in table 10, consisted of three categories: i) free range is not regulated, ii) free range audits, and iii) regulators in an unregulated industry.

Table 10: Theme 5: Free range is coupled with concerns about the lack of regulation

Theme name	**Category names**
T5: Free range is associated with concerns about the lack of regulation	T5:C1: Free range is not regulated (43)
	T5:C2: Free range audits (17)
	T5:C3: Regulators in an unregulated industry (12)
Theme description	**What the theme is not**
• There is an overwhelming concern expressed by almost all of the participants about the lack of regulation and what impact it has on the free range sector. These concerns are associated with the challenge of actually determining what free range chicken is.	• This theme will not analyse the current SAPA guidelines for free range chicken per se, but will share people's views on these guidelines: what works and what does not.

4.6.1. Theme 5, Category 1: Free range is not regulated

Almost all participants highlighted that there were no laws that regulated the production of free range chicken. The literature review also confirmed that there was no independent accreditation body that certified free range producers. The SAPA Code of Good Practice and the Five Freedoms appeared to be the only formal documentation participants referred to when discussing matters on defining free range chicken. One farmer used the FRPFMSA as their guide, while Retailer 1 (2017) and Retailer 2 (2017) claimed to look at other international standards such as the GLOBALG.A.P. (Good Agricultural Practice) standard. The lack of laws and accreditation bodies elicited strong views regarding the need for regulation. Regulator 3 (2017), for example, said they "feel strongly that free range should be regulated" and Chef 1 (2017) felt that the "definitions are not clear". Retailer 3 (2017) firmly asserted the importance of free range protocols and questioned whether "producers tell the truth," which he maintained was "a big problem in this country". Regulator 2 (2017) felt that free range chicken ought to be regulated since it was charged for "at a premium" and asserted that regulation was essential since producers would always find a loophole to maximise profit. Farmer 3 (2017) argued that "in South Africa [free range chicken] is quite open, and people can do what they want."

Some of the participants claimed that they regulated their practices by using the SAPA Code of Good Practice or by developing their own free range production protocols. The use of such strategies was, however, challenged by other participants. Regulator 4 (2017) maintained that "the Five Freedoms are very basic," with Regulator 5 (2017) saying the Five Freedoms were not necessarily animal rights, but broad animal farming guidelines. For Regulator 5 (2017) a descriptions and adherence to animal specific needs would be a more appropriate form of animal rights. Regulator 6 (2017) asserted that the SAPA guidelines focused on the "bare minimum" and are therefore insufficient. Chef 3 (2017) said they "don't trust protocols, because anyone can write a protocol, and how it's measured is then not clear."

Some of the regulators focused much of their attention on ensuring the welfare component of free range chicken. As seen in the literature review (chapter 2), South African law (the Animal Protection Act 1962, ACT NO.71 of 1962) only made provision for prosecuting when there are acts of animal cruelty, not necessarily for poor welfare. Regulator 5 (2017) says these laws are quite detailed and he celebrates the strides taken by the South African Constitutional Court granting permission to the NSPCA to independently prosecute on matters of animal cruelty. Regulator 4 (2017), however, stated that they "work with animal rights groups [and take] issue with the way they deal with retailers. Some of them handle them very delicately." Regulator 4 (2017) was particularly concerned with animal rights groups that claimed to "get into a dialogue with … retailers, but [then they] are also spending weekends with them when [they] are supposed to be auditing [them]."

Although there was a strong sense that free range production ought to be regulated, there appeared to be almost an acceptance that regulation wouldn't happen. Farmer 4 (2017), for example, claimed that the free range broiler sector was too small and made too little money, which meant little effort would be put into free range regulations. Farmer 4 (2017) maintained that it "is about driving [regulation] themselves"; meaning free range producers should make sure they produce free range chicken correctly. Regulator 3 (2017) said, "drafting the law is the easy part, it is the policing thereof that is difficult", and thus he doubted whether it would ever get done. Chef 1 (2017) said he questioned the existence of proper law making, because "[it] is driven by money" and Regulator 4 (2017) said that globally there was "no [..] government

that has a free range protocol", which explained "why DAFF is taking so long" to establish one.

The role of the consumer was also alluded to under this theme. For Regulator 3 (2017) chicken regulating authorities wouldn't lead the change. He said, "pressure needs to come from consumer groups." Regulator 4 (2017) said the problem was that "people have always been under the impression that someone is looking after them – government is watching", yet what people did not realise was that government had a complete hands-off approach – "it's an open market". Regulator 4 (2017) and Regulator 5 (2017) felt strongly about consumer education, which he maintained would affect the most change.

This category sketched a grim reality of the challenges of an unregulated sector. Regulator 1 (2017), one of the leading guardians of the chicken industry confirmed these concerns by saying, "right now your only form of certainty is to trust a private standard audited by a retailer; all other claims should be treated with caution." In light of this, the next category looks at audits in the free range sector.

4.6.2. Theme 5, Category 2: Free range audits

The category about audits emerged as a guarantee provided by some participants that their chicken was really free range. How and by whom these audits were done appeared to vary and, in the case of all the large retailers, the name of the auditors was not revealed. All farms, kitchens and retailers were subjected to health and safety audits as per South Africa's food safety laws. These include ISOs (International Organisation for Standardisation) and HACCPS (Hazard analysis and critical control points) audits. The discussion about audits was therefore not about food safety, but about the checks and balances put in place to ensure that free range production was practised according to how actors claimed to practise it.

Farmer 4 (2017) audited his own farms based on "extensive protocols" he had developed. He had seven contract growers that provided broilers to him and they were selected on having the "same ethos" and were required to "sign a contract" before

entering into this working relationship. Farmer 4 (2017) also controlled the entire value chain from breeding to slaughter to retail, although he provided meat to Retailer 2 (2017), who claimed to also audit the farms that supplies to him. None of the other farmers spoke about having been audited by retailers, although Farmer 6 (2017) claimed to be getting ready for audits since he aimed to start providing meat to Retailer 2 (2017). As indicated in an earlier theme (theme 4, category 1) farmers spoke about retailers visiting their farms, but these were not described as audits.

The large retailers said that they contracted independent auditors to audit the farms they worked with. They said these audits were based on protocols that they (the retailers) had developed themselves. As indicated earlier, the retailers did not provide access to these protocols and claimed the information was confidential. Many participants did not consider the retailer audits sufficient. Regulator 4 (2017), for example, expressed concern about the manner in which retailers conducted these audits, saying, "it's not an independent process" since the auditors were consultants hired to audit against their own protocols. Regulator 4 (2017) argued that the "main problem is that [the] industry is auditing themselves." Regulator 3's (2017) personal views on retailer audits were that they were vague, because retailers chose who did the audit[s] for them. Regulator 4 (2017) supported the need for independent certification and argued that something like "Animal Welfare Approved is the most meaningful label … [of] assurance" since "their protocols are completely transparent, and they are online."

4.6.3. Theme 5, Category 3: Regulators in an unregulated industry

It was important to understand the role of each regulator in what appeared to be an unregulated industry. The diverse roles of the regulators (law makers, watch dogs, special interest groups, etc.) further illustrated why the understanding of free range chicken could be so varied.

Regulator 1 (2017) and Regulator 2 (2017) said their role was to represent the interests of the farmer, with Regulator 1 (2017) stressing that "[they] are not trying to influence what people see as right or wrong when it comes to free range specifically,

because there's [a] nexus, which is a disconnect between sustainability and perceived welfare." Regulator 2 (2017) indicated that since he believed "animal protein is good for you" he supported all chicken production methods. From these statements it was clear that Regulator 1 (2017) and Regulator 2 (2017), two powerful voices in the commercial chicken industry, had no explicit motivations for supporting or not supporting free range production.

Regulator 3 (2017), part of a group "comprised of independent veterinarians focusing on all aspects of poultry health and production", supported a productive industry and although Regulator 3 (2017) offered consults on free range chicken, it was not his sole interest. Regulator 3 (2017), however, still believed that the industry should be regulated.

Regulator 4 (2017), Regulator 5 (2017) and Regulator 6 (2017) all played the role of industry watchdogs and were all very focused on animal welfare. Regulator 4 (2017) said that he intended to keep the free range space trustworthy. Regulator 5 (2017) focused on consumer education as he believed caring for animals was an important part of being human. Regulator 6 (2017) maintained that the SAPA guidelines were not sufficient and felt the need to show a stronger presence; Regulator 6 therefore, "created a portfolio, specifically for free range facilities, [so that] facilities are regularly inspected."

4.7. Conclusion

This chapter presented the varied views, perceptions and understandings of free range chicken. It also presented the significant influences that inform these views and understandings in the first place, making the complexity of the notion of free range chicken evident. The broad range of research participants provided a rich understanding of the sector, resulting in themes that ranged from the conditions of animal rearing, and the quality of the product to the power dynamics among the stakeholders, and the challenges presented by the lack of regulation. The next chapter, chapter 5, will present an analysis of these findings, synthesising them with the literature review of chapter 2.

Chapter 5: Discussion

5.1. Introduction

In this final chapter the findings of this study are discussed. This chapter commences with a review of the lessons learnt from the limitations of this study in section 5.2. Section 5.3, which presents the results of the exploration into *who* or *what* determines free range in the Western Cape, will be discussed in light of the literature review (see chapter 2). Section 5.4 contains reflections on the sustainability of free range production as practised in the Western Cape. While the issue of sustainability was not part of the research objective, my disciplinary background in sustainable development prompted me to consider whether free range chicken could offer a more sustainable alternative to conventional broiler production. The sustainability considerations discussed in this section are based on Griggs's (2013) nested model of sustainability that regards the Earth system as the core that supports the interdependent social and economic systems. Section 5.5 then concludes with recommendations for future research. First though, a swift summary of the previous chapters.

Chapter 1 introduced the literature that led to the development of the problem statement: that dominant approaches to livestock production are harmful to the environment, human health and animal welfare, yet meat consumption is on the rise. Sustainable alternative production approaches are therefore urgently required, and free range chicken production is the main alternative offered in South Africa. However, there are no laws that regulate free range chicken production in the country. Therefore, the research objective was to understand *who* or *what* determined whether broiler production in the Western Cape is free range.

Chapter 2 provided a review of the literature relevant to the research objective in three sections. The first section covered literature on global food system trends, discussing the impact of livestock production on the Earth system, and then the major transitions shaping global health: population growth and the urban transition, Big Food transitions and the corporate food regime, the supermarket transition and the nutrition

transition. Since free range appears to be offered as a sustainable alternative given the challenges associated with conventional meat production (an issue raised in the first section of the literature review), the second section conceptualised and defined 'sustainability'. Three systems were identified as vital to the sustainability discourse – the environmental (Earth) system, the social system and the economic system. The last section of the literature review zoomed in on chicken production, providing a synopsis of conventional broiler production, followed by an overview of free range production, and a review of the literature on free range chicken meat production through the lens of sustainability discourse, that is, in terms of the Earth system, the social system and the economic system.

In Chapter 3 the approach taken to the empirical research, the data collection and analysis was presented. I outlined how my worldview, social constructionism, guided the choice of research design and data collections methods. An exploratory case study design was chosen to investigate the determinants of free range chicken within the bounded system of the Western Cape. Purposive sampling identified 41 potential participants from among those who bring free range chicken meat to the market in the Western Cape: farmers, chefs, retailers and regulators. Twenty participants agreed to participate in the study. Semi-structured interviews were the main data collection method, supported by document analysis and photographs. The document analysis was limited since I was denied access to the relevant parties' production protocols. Thematic analysis was employed by coding data to develop themes, determined on the basis of prevalence and whether they helped achieve the research objective.

Chapter 4 then presented the research findings according to five major themes: 1) free range means a bird reared with good animal welfare in mind, 2) free range means quality meat, 3) free range means a profitable business, 4) free range is determined by the decision maker or by access to markets, and 5) free range is coupled with concerns about the lack of regulation. The views within the themes revealed that participants' views were indeed socially constructed and therefore complex and varied. Although participants spoke about the same category or theme, their views varied greatly.

This final chapter will now take the findings from this empirical study and discuss how they shed light on the study's research objective when considered against the backdrop of the literature reviewed.

5.2. Lessons learned and the limitations of this study

There were two major limitations of this exploratory case study (identified in chapter 3, section 3.8.2). Firstly, my limited social capital in the chicken sector; and secondly, limited time, which meant I could not study free range chicken meat from the viewpoint of the consumer. I will briefly discuss what I have learnt from each.

My limited social capital meant that I had to be rather resourceful and persistent in convincing some of those I approached to participate in the study. I had to refine the study's value proposition so that participants could understand the importance of their participation, while allaying any fears they had. It was therefore important to make it clear to participants that this research did not aim to critique their free range practices, but to understand how those in the sector interpret and practise free range, especially since there was no formal law or independent regulation. Promising participants anonymity and allowing them to withdraw at any stage of the process, appeared to curb their fears. The snowball sampling method also resulted in greater access since some farmers, small retailers or regulators only spoke to me because I was referred to them by someone they knew and trusted.

Having limited time prevented me from conducting a wider exploratory study, but it also had positive consequences in that I was forced to maintain my focus and keep to strict timelines. I had to practise unrelenting discipline, constantly reminding myself of the research objective I was trying to achieve. Chicken appeared to be a topic the participants were very passionate about and so it was important to be cognisant of those emotions whilst empirically considering the research problem. I had to prohibit myself from exploring interesting avenues that presented themselves during the study, but were not directly relevant to the research objective. I have tried to identify these interesting avenues as recommendations for further research presented at the end of this chapter.

5.3. Achieving the research objective

5.3.1. The research objective unpacked

This exploratory study aimed to generate knowledge about the socially constructed world of free range chicken (Creswell, 2014). The research objective aimed to establish who decided, and what determined, whether broiler production was free range. With this study I wanted to develop an improved understanding of free range chicken by evaluating, describing and explaining the social phenomenon of determining whether chicken is free range (Mouton, 1996), whilst highlighting the tensions, contradictions and hesitations of the participants (Denzin & Lincoln, 2005).

Since free range chicken production is not legislated, nor privately certified, establishing who and what determined free range was important for a number of reasons. Firstly, the definition of free range chicken played a big role in how the Earth system and social system were impacted since intensive livestock production, and alternatives such as free range, use Earth system services and social system services. Secondly, the determination of free range chicken had implications for the treatment of animals, especially since the South African Constitutional Court recently upheld the Animal Protection Act 71 of 1962 (Republic of South Africa, 1962) that regards animals as sentient beings, capable of suffering and experiencing pain; so, despite being reared for human consumption, this act established a chicken's right to a life worth living (Animal Voice, 2017). Thirdly, since free range chicken production is embedded in the corporate food regime, a politicised system that is driven by money, understanding *who decided* was important since it had an array of ethical implications. Finally, since free range chicken was charged at a premium rate, consumers had a right to know *what determined* this premium.

Essentially, the research objective had two components, firstly to establish *who decides* whether production is free range, and secondly to understand *what determines* whether production is free range. I chose to include both elements in the objective since it allowed for a more open, exploratory and socially aware approach to the study. If I had looked only at *what determines* free range production, I would have been limited to exploring only technical descriptions of free range production, such as

stocking densities and feed types, while a focus only on *who decides* would have primarily uncovered the socio-political elements of free range production. Exploring both determinants allowed for a rich discovery of the interlink between them.

5.3.2. Who determines free range?

5.3.2.1. Not law makers

According to the literature there appears to be no internationally agreed upon minimum requirement, standard or law that governs free range broiler production. In the European Union free range production is guided by animal welfare legislation, which includes the Five Freedoms as a minimum requirement (Webster, 2013). The European Union legislation stipulates that free range hens must not only have access to outdoor runs but must also have indoor housing in the evening (Stevenson, 2012). Other animal welfare stipulations in the European Union include 1) rearing slower growing breeds, 2) providing access to the outdoors, 3) providing environmental enrichment such as straw bales, perches and low barriers to increase activity and welfare in sheds, 4) ensuring low stocking densities and 5) securing shorter transport times to and waiting times at abattoirs (Van Horne & Achterbosch, 2008; Turner *et al.*, 2005).

The Five Freedoms also form the basis of the SAPA Code of Good Practice in South Africa (SAPA, 2012). Included in the SAPA guidelines are the following specifications: 1) birds should not be stocked at more than five birds per square meter, 2) there needs to be minimum of 50 percent living vegetation present at all times, 3) external shade of four square meters per 1 000 birds is required by means of either trees or artificial structures, 4) provision must be made for outside cover to reduce stress reactions from overhead predators, 5) fencing must be adequate to protect birds from terrestrial predators, 6) birds must have access to the external range for a minimum of six hours a day during natural daylight, and 7) access to external range should be provided by means of doors, gates or pop holes – pop holes should be at least 35 centimetres high and 40 centimetres wide, with an allowance for at least two meters per 1 000 birds, and lastly, 8) birds can never, at any stage of their life, be

allowed in a cage (SAPA, 2012). As a reminder I include the Five Freedoms here again:

Table 10: Five Freedoms

Freedom	Provision
1. Freedom from thirst, hunger and malnutrition	by ready access to fresh water and a diet to maintain full health and vigour.
2. Freedom from discomfort	by providing a suitable environment including shelter and a comfortable resting area.
3. Freedom from pain, injury and disease	by prevention or rapid diagnosis and treatment.
4. Freedom from fear and distress	by ensuring conditions that avoid mental suffering.
5. Freedom to express normal behaviour	by providing sufficient space, proper facilities and company of the animal's own kind.

The SAPA Code of Good Practice are only guidelines; there is no legislation for free range in South Africa since the Agricultural Products Standards Act 119 of 1990 (Republic of South Africa, 1990) does not allow for production schemes to be regulated. This means that, as with organic or biodynamic production, consumers can only rely on private certification schemes, yet there are no such schemes for free range chicken in the country (Free Range Chicken Farming, 2017). According to SAPA, DAFF is in the process of making amendments to the Agricultural Products Standards Act 119 of 1990 (Republic of South Africa, 1990), although this has yet to be completed (Lovell, 2017). Some case study participants said that they doubted the urgency with which these changes would take place. Regulator 4 (2017) pointed out that there was no international legislation: "there is no … government that has a free range protocol," which explained, in his mind, why DAFF was taking so long to establish one. It is also important at this stage to be reminded that neither DAFF nor SAPA reports on the free range sector, so it is not clear who practises free range production or what the size of the sector is. Presumably, if the sector were significantly large more pressure could be placed on DAFF to make amendments to the Agricultural Products Standards Act 119 of 1990 (Republic of South Africa, 1990).

In the case study a few participants made reference to the SAPA Code of Good Practice, also referred to by them as "the SAPA guidelines", and the Five Freedoms. The large retailers, Retailer 1 (2017) and Retailer 2 (2017), as well as Farmer 4 (2017) – who supplied to Retailer 2 – referenced the SAPA guidelines when discussing their own production protocols. Retailer 1 (2017) specified that they followed the SAPA guidelines and the GLOBALG.A.P. standards. GLOBALG.A.P. is an international certification for general good agricultural practices such as hygiene, workers' health and safety, general site management and product traceability; and an animal welfare add-on has also recently been released (GLOBALG.A.P., 2017). However, this appears to be a basic animal welfare standard for any type of chicken production and there is no specific reference to free range broiler production. Retailer 2 (2017) was more explicit about using the Five Freedoms and Farmer 4 (2017) said their protocols were based on extensive research, which included the SAPA guidelines. The regulators, regarded as special interest groups (Regulators 4, 2017; Regulator 5, 2017; Regulator 6, 2017), all critiqued the SAPA guidelines and the Five Freedoms. Regulator 4 (2017) regarded the SAPA Code of Good Practice as loose guidelines, while Regulator 6 (2017) had distanced himself from the SAPA guidelines, saying he did not support them because they were insufficient. Regulator 5 (2017) said the Five Freedoms were "guidelines for the uninformed". Despite the availability of the SAPA guidelines, participants still appeared to be concerned about the unregulated context of free range broiler production, an issue that was detailed in theme 5, category 1 of chapter 4**.**

The research findings confirmed what a review of the literature pointed to: that government, in particular DAFF, has no formal or legal influence in determining free range production in South Africa, while the industry body SAPA, may have only limited influence over the practices of free range production in South Africa. SAPA's guidelines, which include the Five Freedoms, appeared to influence some of those who bring free range chicken to market, but others regarded these guidelines as insufficient.

5.3.2.2. Those who hold economic or decision making power

The case study revealed that, in the absence of regulations, it was those who held decision-making power or those who had access to markets who determined what free range chicken was. This became clear when speaking to large retailers such as Retailer 1 (2017) and Retailer 2 (2017), who had production protocols that dictated how farmers who wanted to supply free range chicken to them were expected to practise. These retailers refused to share their protocols with me, stating that doing so would minimise their competitive advantage over other retailers. Retailer 2 (2017) further justified his decision for withholding the protocol by saying that they had spent a lot money on researching these practices. The influence of these retailers, in terms of how they determine what free range means in practice, was confirmed when speaking to Farmer 6 (2017), who indicated that his goal was to be audit ready for Retailer 2.

The power of the large retailers was clear from the literature too. It showed that 97 percent of all formal food sales in South Africa are through the four major supermarket chains in the country (Pereira, 2014). This concentration of power reflects the corporate regime characteristics (McMichael, 2005; Holt-Giménez & Shattuck, 2011) present in the South African food retail system. Many of the participants seemed to share this view of the retailers' power: Regulator 4 (2017) stated: "[o]ur entire food chain is controlled by the retailers, even to the point of what is grown and when it is grown."

As was alluded to above, most farmers, some regulators and smaller retailers did not deem the larger retailers' free range standards as good enough. Regulator 4 (2017) said that retailers were proclaiming that their chicken was free range when it was in fact barn raised with pop holes. "Barn raised" means the birds are raised in a barn, which is essentially conventional production, but "barn raised with pop holes" means that with the added pop holes on the side of the barn, where birds are able to go out during the day. Regulator 4 (2017) regarded this tendency of retailers as the misleading of consumers. Farmer 5 (2017) was particularly dismissive of retailers' practices, saying that large retailers were motivated only by maximising profit, calling

into question whether issues like improved animal welfare, or even consumer demands, were driving their free range practices.

In contrast to other participants' views on retailers' dubious motives, all the retailers asserted that they offered free range chicken for sale in response to demands from their customers. Retailer 2 (2017) said that they couldn't keep up with the demand and that free range chicken was one of their best sellers. He said that their customers demanded transparency and therefore the company deemed it vital to be grounded in a good philosophy and have an auditing system in place. Retailer 2 (2017) also highlighted the role of social media in keeping them alert and in the spotlight, sometimes shifting consumers' attention to something that was not necessarily true or important, but as a big retailer they had to respond to these concerns. With this the retailer alluded to the fact that consumers' concerns were able to sometimes determine whether something was free range or not. Retailer 2 (2017) was of the opinion that good auditing systems were often what protected them in the face of social media onslaughts.

The fact that most of the large retailers were self-regulating and essentially self-auditing around free range also concerned participants. Regulator 4 (2017), for example, said: "it's not an independent process", explaining that the auditors were consultants hired by the retailers to audit against the retailers' own protocols, and therefore the "main problem is that [the] industry is auditing themselves." Regulator 3 (2017) found it "strange" that large retailers refused to share their production protocols in the name of competitive advantage. Other production protocols such as those for organic production, the GLOBALG.A.P., and Animal Welfare Approved are openly available online (Regulator 4, 2017). With undisclosed production protocols, it was thus hard to verify whether consumers' interests, such as mentioned by Retailer 2 (2017), and animal welfare interests, such as claimed by Retailer 1 (2017) (Five Freedoms), were being protected. Since there is no regulation obliging large retailers to make these protocols publicly available it means they are the ones who get to decide what free range chicken is and what it is not.

The data also suggested that there was a great measure of mistrust and continuous disputes among even the less powerful group of actors. This was revealed in theme 5,

where most participants spoke about themselves as doing real free range production, but casting doubt on the validity of similar claims by others. Farmer 4 (2017) described others as "pseudo-free range", and Farmer 1 (2017) said that free range chicken produced by most was "commercial nonsense." Regulator 3 (2017), who offered consultations to many broiler farmers (both conventional and free range) contended that many farms put the term on their labels "as a marketing strategy" since he knew their practices and considered them to be doing conventional production. Theme 4, category 6, lack of community, captured the fact that most of the participants were well aware of most of the other participants in the sector, yet there was very little collaboration or interaction among them. Some of these smaller actors spoke about how they did not trust other small actors in the sector. Farmer 4 (2017) said that he knew about the other players, but did not necessarily believe that they had the same ethos. Some farmers seemed to avoid interaction based on seeing others in the sector as competition. Farmer 6 (2017) said he admired Farmer 4, but had not spoken to him in fear of being seen as competition. Farmer 3 (2017) had the same sentiments regarding Farmer 2, who is their nearest fellow free range producer. The lack of regulation in the sector clearly leads to farmers being able to interpret free range chicken differently, and disagree about how free range production should and should not be practised. This could be one of the main reasons they are not working together. However, the fact that they regard each other as competition could also indicate that the market for free range chicken is limited, and so farmers need to compete for market share, which would also cause them to avoid working together. As indicated in the findings, the lack of community did not necessarily determine the definition of free range chicken, but highlighted how the lack of unity divided the definition of what free range chicken was.

An interesting issue that emerged from the participants was the important role non-profit organisations, especially special interest groups, had played in this unregulated space. While free range practitioners have been waiting for government to revise the law on production schemes, special interest groups seem to have made strides in holding the sector accountable, educating consumers and putting pressure on big players such as the large retailers. Regulator 5 (2017) gave some examples of how his organisation was "totally responsible for the growth of awareness". Due to his belief that improved animal welfare in a country starts with education, he cited his work in

developing content about animal welfare, including humane farming practices, for the National Curriculum and Assessment Policy Statement (CAPS), which became the national school curriculum in 2012 (Regulator 5, 2017). Regulator 5 (2017) also lobbied at government level on animal welfare and agriculture issues. He felt that rulings such as the Constitutional Court decision to allow the NSPCA to privately prosecute for animal cruelty offenses was a big victory for animal welfare. Regulator 4 (2017) said that he had met with Retailer 1 to discuss improved farming practices, although details of the meeting was not shared. Regulator 5 (2017) also believed that "the cage free revolution" (for chicken layers) showed that a combination of special interest groups, social media and active citizens could dictate a new normal. From these comments and examples then it seemed that special interest groups could, in some cases, determine free range practices**.**

5.3.2.3. Those who want to make a difference

The farmers and the chefs were a particularly interesting group of participants in the dataset as they all linked their intention to farm real free range chicken or cook sustainable food with their life stories or stories about their passion. Although they expressed concerns around the corporate food system and the lack of regulation, these issues did not appear to have discouraged them. Their stories were often what drove their determination of what free range chicken was in their business or kitchen. These stories ranged from having a concern for animal welfare – see 5.3.4.1 (Farmer 2, 2017; Farmer 4, 2017; Chef 1, 2017; Chef 4, 2017) – to a keen interest in human health – see 5.3.4.2 (Farmer 1, 2017; Farmer 4, 2017; Chef 2, 2017) – to wanting to make a contribution to improving the food system (Farmer 5, 17; Chef 2, 2017).

Farmer 5 (2017) said that he was inspired to farm after reading the book *Omnivores Dillema* (Pollan, 2006) (which problematises modern industrial farming and seeks sustainable alternatives) and Chef 2 (2017) said that he felt he could make a meaningful change by starting to source ethical food. Chef 2's (2017) research into the food system made him realise that livestock were reared in intensive feedlots and that they were given hormones to promote growth, which affected human health. Chef 2's (2017) concerns about the manner in which livestock were raised is reflected in the literature reviewed – it shows that poultry farmed for meat and eggs are kept more

intensively than any other animals in production (Duncan, 2001). This chef's thoughts about hormone use was a debated issue among participants (see section 5.3.4.2), although the literature confirmed that conventional poultry does use routine antibiotics to promote growth (Witte, 1998) or to permit growth (Ferket, 2004). Farmer 4 (2017) said that such uses of antibiotics were necessary since intensive livestock systems put animals under immense stress, increase their likelihood of becoming ill.

Since the farmers and chefs had created their own markets or support for their products, they thus had the ability to dictate what free range chicken was, instead of having to follow supermarket prescriptions. Farmer 2 (2017) indicated that he had a shop on the farm and sold his products through an online platform, allowing for direct contact with his consumers. Farmer 3 (2017) explained that he started selling his produce at a farmers' market on Saturdays, but now also supplied other small retail outlets in his area; these smaller outlets did not dictate his free range practices. Farmer 5 (2017) mentioned having a hotel, a restaurant and a small shop on his farm where his produce was sold. He also mentioned supplying other restaurants, hotels and a particular organic shop in the Western Cape. Farmer 4 (2017) developed extensive protocols for his free range chicken production, which created large retailer interest during the initial wave of consumer demand. Farmer 4 (2017) said "I brought free range to this country", and have since developed well established relationships with large retailers. His passion was further revealed in comments about how much time and money he had spent developing the protocol and his unwillingness to compromise on it, even if large retailers demanded less. In fact, Farmer 4 (2017) claimed his protocol informed Retailer 2's free range protocol. Due to the size of Farmer 4's production and being one of the first entrants to this sector, Farmer 4 was able to dictate how he preferred to produce for Retailer 2. Farmer 4 (2017) also pointed out that he had his own retail (factory) stores where he sold chicken under his own brand name.

A similar trend is seen with some of the chefs who determine the food philosophy in their kitchens and therefore determine what free range is at their establishments. Chef 1 (2017) plainly said that he dictated the food philosophy despite not being the owner of the establishment, while Chef 2 (2017) made it clear that the establishment's values

had to align with his own, otherwise he would not be able to work at the restaurant. Chef 2 (2017) indicated that his establishment was situated on a farm and so the meat he used in his cooking came from chickens reared right there. He furthermore mentioned that these chickens were also sold directly to consumers through a shop on the farm. Chef 4 (2017) pointed out that because he started his own establishment he could determine and define whether the chicken used in his kitchen was free range or not. Some of the chefs mentioned having actually visited farms to investigate the practices there and decide, based on that, whether or not to support that farmer. Chef 1 (2017) spoke about how he would prefer always using Farmer 5's free range chicken, but that it was not possible, because Farmer 5 did not always have the volumes Chef 1 needed throughout the year. In the case of the farmers and chefs then, having access to their own market or having decision making power within the commercial system, means they can shape their own free range practices.

5.3.3. What determines free range?

5.3.3.1. Animal welfare practices or standards

The literature reveals that conventional broiler production is particularly known for its poor animal welfare practices such as high stocking densities (Duncan, 2001); the use of fast growing breeds that is said to result in respiratory disease, heart and lung failure (Animal Voice, 2017); transport distances (Duncan, 2001) and antibiotic dependence (Webster, 2013; Witte, 1998). To curb these poor practices, the European Union guidelines for free range include welfare aspects such as rearing slower growing breeds, providing access to the outdoors, ensuring low stocking densities and shorter transport to and waiting times at slaughterhouses (Van Horne & Achterbosch, 2008; Turner *et al.,* 2005). The SAPA Code of Good Practice has similar guidelines, which include specifics for stocking densities, external shade, and access to the outside (SAPA, 2012). In the case study, when participants were asked about their rearing practices for free range birds, almost all of them referred to their practices as being motivated by a concern for animal welfare. This does not mean that the participants presented agreement on what constitutes animal welfare though – this is explained in more detail below.

The notion of animal welfare as presented by participants was broad and included references to the living conditions of the birds, the physical treatment of birds, how long the birds lived for, their diet and the process of preparing for slaughter. All of these specifications were purported to be what made chicken rearing practices free range. These views and descriptions are detailed in chapter 4, theme 1, free range means a bird that is reared with good animal welfare. One major point of agreement, among all farmers, most of the chefs and the smaller retailers, was that low stocking densities and access to the outside were good for animal welfare and therefore a prerequisite for farmers who claimed to practise free range production. Farmer 1 (2017), for example, spoke about chickens' "natural habitat", while Chef 1 (2017) and Regulator 4 (2017) referred to chickens needing "freedom to move", and Farmer 2 (2017) and Chef 3 (2017) both expressing the same ideas as "freedom to roam."

However, despite their agreement on access to the outside, there was still variation among them regarding when and how it ought to be provided. Retailer 2 (2017) described this as a practice influenced by the weather and so good animal welfare practice would mean considering the weather before allowing the birds to roam outside. Regulator 5 (2017) stated that they deemed having chicks outside before three weeks of age as cruel since they would be too tiny to resist the weather and predators. It is worth noting here that all farmers, as a rule, kept their baby chicks indoors. The debate about outside roaming also included theories about why birds do and do not go outside. Unpleasant temperatures, their desire to stay close to their food, their need for shade and a fear of predators were all cited as reasons for the birds not going outside. The fact that domestic chickens are originally from the East Asian red junglefowl, a fact that is confirmed by the literature, was used by Regulator 1 (2017) to justify chickens' need for shade: "they [are therefore] not conditioned to bright light." It is for this reason that Farmer 4 (2017) said that he had built shade structures for his birds to shelter under when they go outside. Others, such as Farmer 3 (2017), argued that birds preferred to stay close to their feed, even if provision for outside access was made. Regulator 4 (2017), acknowledging the birds' need for the outside and proximity to their food, argued that the food needed to move outside during the day to force the chickens to move around. Farmer 6 (2017), however, opposed such measures, explaining that his birds naturally went out during the day to eat insects. In line with the literature, low stocking densities was also cited as a

prerequisite for animal welfare for all farmers. However, here again, as with previous points of agreement, the farmers' interpretations of what "low stocking densities" meant differed. Farmer 2 (2017) said that they did not have a set number of birds per square metre, Farmer 3 (2017) said theirs was 10 birds per square metre, Farmer 4's (2017) was 15, Farmer 5's (2017) was eight and Farmer 6 (2017) said his was nine birds per square metre. Ideas on preventing predator threats also varied; Farmer 5 (2017) kept his birds permanently covered, while Farmer 2 (2017) used donkeys to catch the rats, which he said was a predator threat on their farm.

These differences in understanding of what constitutes good animal welfare centre around a basic disagreement about whether one should consider just the needs of the birds (in terms of their health and survival) or also try to ensure that they can express their natural behaviour. This could be related to the tension that seems to exist between animal anti-cruelty measures and legislation that ensures animals can live a good life. As was borne out in a review of the literature, South Africa has anti-cruelty legislation in place (Animal Protection Act 71 of 1962), but this applies to all animals. It does not address the specific and varied needs of different animals. More recently the South African Constitutional Court has reminded us that animals are sentient beings, capable of experiencing suffering and pain (Animal Voice, 2017); and that they therefore have the right to a life worth living. Regulator 5 (2017) felt that this was a big victory for animal welfare and that the Constitutional Court had "taken a huge step forwards." Animal anti-cruelty approaches seem most closely related to meeting the birds' basic needs for survival (for example, access to water and feed), while approaches that recognise the right of birds to a life worth living would go beyond this to look at ways in which the birds can most fully express their natural behaviour and preferences, such as being given access to fresh pasture where they can forage for insects and dust bathe. Regulator 5 (2017) also anticipated a new trend in animal welfare, saying, "scientists are looking at the needs of the individual animal species, so needs is going to be new thing."

In line with the idea of providing animals with a life worth living, most participants were in favour of the interpretation of animal welfare as treatment that was good for the animal, that went beyond seeing to their basic needs and acknowledged the animal behaviour specific to them. However, their practices did not always match their

rhetoric – see the discussion in section 2.2.4 about the cost considerations of animal welfare practices. Again participants' views regarding what good treatment entailed varied. There were deliberations about stress-free living, access to good feed, good hygiene and the process of preparing the animal for slaughter. The question of what is good for the birds also surfaced in some farmers' and retailers' specifications regarding animal feed. It was often insisted that animal by-products ought not be put in animal feed, but be replaced with soy protein instead. Some, however, maintained that birds ought to have access to fresh pasture since insects formed an important part of the bird's protein supplement. One farmer indicated that he was investigating cricket farming, although it was not clear whether this was motivated by a desire for good treatment of the birds or whether it was motivated by a need to reduce his feed costs.

Participants' considerations regarding what is good for the animal also included the approach to building the bird's immune systems: Farmer 4 (2017) vaccinated his birds, Farmer 3 (2017) included effective micro-organisms (EM) in their feed to strengthen the birds' guts, and Farmer 5 (2017) moved his housing often to prevent parasite build up and thus keep the birds healthy. Opinions about the slaughter process and the process of getting the birds to slaughter also reinforced the debate about what is good for the animal. Farmer 4 (2017), for example, had a very specific bird catching method to ensure that the birds remained calm and that their flesh was not bruised. This farmer also specified transporting distances of less than a 100 kilometres. Farmer 6 (2017) was similarly wary of trips in excess of 100 kilometres, but was nevertheless considering sending birds on a 1400 kilometre journey to pursue a business opportunity.

The data as well as the literature reviewed in this research study show that that the notion of animal welfare varies in understanding, interpretation and practice. There seems to be a fault line between what is necessary and what is good. The issue of how one ensures that the birds have a life worth living is particularly contentious. However, despite the variety in interpretations of what constitutes good animal welfare, it was clear from the data that participants themselves determined what animal treatment was required for free range production.

5.3.3.2. Demand for antibiotic- and hormone-free chicken meat

The literature shows that food system transitions, specifically nutrition transitions (Popkin & Gordon-Larsen, 2004; Drewnowski & Popkin, 1997), are leading to an array of health concerns (WHO, 2015; Gómez *et al.*, 2013; Godfray *et al.*, 2010). Meat, specifically processed and red meat, is regarded as of one of the drivers of obesity and rising levels of non-communicable diseases, such as diabetes and cardiovascular disease (WHO, 2015). There are also studies that specify that antibiotic use in meat production is bad for human health (Phillips *et al.,* 2004; Witte, 1998; WHO, 1997). Nevertheless, the legal literature (European Union) and the SAPA guidelines appears not to be primarily concerned with, and does not consider, the health concerns associated with antibiotic or hormone use in chicken production.

The case study conversely revealed that many of the participants believed that antibiotic-free chicken equated free range chicken. The farmers said they mostly used antibiotic-free feed and the farmers and chefs alike associated antibiotic-free production with a healthier meat product. Every single farmer explicitly stated that they did not use antibiotics, with only a few acceding that they would use antibiotics if the animals were sick – in the interest of the birds' welfare – but then they would withdraw the birds from the system. All the chefs and some retailers and regulators insisted that if it was not antibiotic free, it was not free range. The case study therefore established that antibiotic use is associated with perceptions of health risks. The importance of human health as part of the free range discourse presented itself in various ways. Some recounted personal experiences, such as Farmer 1 (2017) and Retailer 4 (2017), which drove them to provide free range chicken that was antibiotic- and hormone-free. For others it was just an important part of the production process – this despite the fact that guidelines such as the SAPA Code of Good Practice do not stipulate that free range production must exclude the use of antibiotics and hormones.

While the majority of the participants concurred on the issue of antibiotic use, there was much more division among them when discussions focused on hormone use. Those who maintained that hormones were used, said it was administered through the chicken feed. Some participants stated that hormones are never used in chicken production, even in conventional systems (Regulator 1, 2017; Regulator 3, 2017;

Farmer 4, 2017). Regulator 4 (2017) insisted that hormones were administered, although industry denied it, and Regulator 5 (2017) said, "whenever I see man boobs now, I think of chicken ... I think there is something in that chicken." Regulator 5 (2017) also pointed out that his suspicions regarding industry's use of hormones were aroused, because broilers grow quicker today than they used to. Others maintained that the lack of hormones was exactly what made chicken free range (Farmer 2, 2017; Retailer 3, 2017; Regulator 4, 2017). "hormone free" (Farmer 2, 2017; Chef 3, 2017; Chef 4, 2017; Retailer 4, 2017),

The vast differences of opinion (and purported fact) drove me back to the literature in search of evidence that hormones are used in chicken production. I could not find any such literature. The reason for both the dearth of literature on this subject and the divided opinions among participants could be what Ferket (2004) calls a misunderstanding between antibiotics used to improve growth performance, sometimes incorrectly described as growth promoters, and anabolic hormones, which are actually used to promote growth in the swine and cattle industries. From the disparities in case study participants' opinions about and understandings of hormones and how it relates to chickens' growth rate and what causes that, it is unclear whether free range chicken means hormone-free chicken. However, the dataset is clear on this: providing birds with antibiotic-free feed is a determinant of chicken production that is free range.

5.3.3.3. The price, and therefore the quality of the meat

Free range chicken meat was regarded by many of the participants as a better quality meat and, for the chefs in particular, a better tasting meat. Chef 1 (2017) said that he had done numerous blind tastings and it turned out that free range meat was always the better tasting meat. For some the better quality and taste of the meat was the result of it being reared in a better, more humane, healthier manner; this was also why it was more expensive to produce. All participants acknowledged that free range chicken was more expensive. Chef 3 (2017), for example said that he understood why free range chicken was more expensive – it cost more to produce. In fact, Chef 1 (2017) said that the price of chicken meat revealed to him whether or not a farmer was producing real free range chicken. Regulator 1 (2017) felt that free range chicken was

more expensive, because it was produced inefficiently in contrast to conventional production where resources were used more efficiently[9]. He was the only participant who expressed this view. Nonetheless, most study participants equated real free range chicken with a higher price and therefore price determined free range chicken. Price as a determinant of free range chicken was also alluded to in the literature (Lim Tung, 2016; Vermeuluen & Bienaben, 2007).

5.3.3.4. The commercial viability of the free range operation

The literature describes chicken production as part of the economic sector, citing market share (Stander, 2016), imports (Ismail, 2017; Stander, 2016), trade (Ismail, 2017; Stander, 2016; Kriel, 2016) and the cost of rearing chicken (DAFF, 2014) as economic features of the chicken industry. Larger market share indicates the size of economic activity and therefore the demand for and supply of chicken meat. According to Regulator 2 (2017) the South African market ate all parts of the chicken and was therefore an attractive market for the United States and the European Union who did not eat all the parts. This has led to what is considered chicken dumping (Stander, 2016), an oversupply of cheap chicken on the South African market. The large amounts of imported chicken, however, is not specified as free range chicken and therefore not considered part of the economic debate in this case study. The participants did not mention producing free range chicken for, selling it to, or buying it from the international market either.

The literature specifically points to the cost of feed as having a great influence on the cost of rearing chicken (DAFF, 2014). However, this fact is not directly corroborated in the South African context. Production schemes cannot be regulated in South Africa (The Agricultural Products Standards Act 119 of 1990), which appears to be the reason why public entities such as DAFF and SAPA do not report on it. The case study, however, uncovers that feed costs are a concern for many free range producers and sellers. Retailer 3's (2017) comment captures these concerns: "a major part of your input cost is the feed that you are giving the chicken." Environmental and economic shocks that affect feed prices would then heighten these concerns.

[9] Regulator 1's comments about the efficiency of resource use also have sustainability implications. These are discussed in more detail in section 5.2.3 of this chapter.

According to Stander (2016) in the literature, the maize prices were currently at a record high due to the devastating drought, and at the time of the data collection, April to May 2017, Mosaka (2017), confirmed that the Western Cape was facing its worst drought since 1904 and was declared a disaster area in March 2017. This kind of water shortage would affect feed prices and thus place enormous pressure on animal farmers.

In this case study free range chicken was also described as, or discussed within, a commercial framework. This is detailed in chapter 4, theme 3, free range means a profitable business. Here participants referred to free range chicken production as a business opportunity or a niche market. They also expressed the need for free range production to be commercially viable or profitable, especially given the higher cost of producing free range chicken. Farmer 1 (2017) said a primary consideration for him was to "build a viable business" and Farmer 6 (2017) maintained that "no one wants to farm at a loss". Farmer 3 (2017) asserted that keeping production costs down is important because "chicken sold in retail stores are about Rands and Cents … [and customers would] … rather purchase a R70 chicken than a R90 chicken."

At this point it is interesting to note that the case study dataset revealed an interesting tension between animal welfare and the cost of free range farming. This is seen when linking the data in theme 1, free range means a bird that is reared with good animal welfare, with theme 3, category 2, the cost of rearing chicken. In theme 1 these tensions were revealed in three examples. Firstly, longer life spans were described as more animal welfare friendly or as a characteristic of free range production, yet for most farmers in the study, the life spans of their chickens were only a week longer than those reared in conventional production systems. Some farmers and retailers indicated that longer rearing times meant more feed and thus higher costs. Retailer 2 (2017) said that producing free range chicken cost more per kilogram since they used more feed and more water. Farmer 3 (2017) and Retailer 2 (2017) also argued that in retail they compete with selling price per bird, not per kilogram, and therefore bigger birds were not ideal. Secondly, feed was regarded as the most prominent expense in rearing chickens and therefore what a farmer paid for feed and how long they feed became significant. The chickens' diets got quite a bit of attention in both the literature and this case study, with both highlighting the importance of antibiotic-free

feed. Only one farmer in the study insisted that GMO-free, biodynamic or organic feed was actually the best for the birds and for human health. The unavailability of these feed options in South Africa meant that most farmers were limited to using Epol free range feed. Some of the farmers said they did consider importing GMO-free or organic feed, but that doing so would make production too expensive. Thirdly, feed on all the farms were kept inside and the case study revealed that birds tended to stay close to their feed, which implied that birds stayed inside. This logic was ignored by the majority of farmers despite all their claims that free range chicken equated birds having the freedom to be outside. Only Farmer 6 (2017) spoke about reducing the amount of feed available in the barns during the daytime, forcing them to go outside to forage. My observations on his farm confirmed this: the grass around the outside of the barn had clearly been eaten, proving that the birds spent a considerable amount of time outdoors. At other farms though, the grass outside the barns showed no signs of having been eaten by the birds. Regulator 4 (2017) felt that farmers do not move feed outside because they were focused on money as too much movement would reduce the size of chickens. These examples show that what determines free range chicken is what makes financial sense.

5.3.4. Sustainability considerations

Determining whether or not free range production, as interpreted and practised in the Western Cape, is a more sustainable alternative to conventional broiler production was not part of the research objective for this study. However, given my background in sustainable development, and the need for more sustainable chicken production alternatives outlined in the literature in chapter 2, I present some reflections on the sustainability of free range broiler production in the Western Cape. While the literature regards free range chicken as an alternative production method to conventional chicken meat production, it is vague on whether it is actually a more sustainable alternative. For a production scheme to be considered more sustainable it would need to encompass environmental (Earth), social and economic system considerations. In the literature review I argued that a nested system (Griggs, 2013) view of sustainability is the most appropriate, since the Earth system supports the interdependent social and economic systems.

Based on the outcomes of the case study, it is evident that social and economic system considerations are what determines free range chicken. The social system aspects that participants referred to included animal welfare and human health concerns. In the literature on sustainability the social system also includes consideration for employment opportunities and specifically the notion of ownership (Mebratu, 1998). Hopwood *et al.,* (2005) argues a transformationist view of sustainable development necessitates not only the right to human health, but also a strong commitment to social equity, implying that access to livelihoods, resources and economic and political decision making are connected.

Although most study participants appeared to be doing well from a commercial perspective, the idea that free range chicken production could transform the ownership or employment structure of chicken production was not really part of the discourse. Retailer 2 (2017) spoke about their social responsibility towards their workers – on the farm and in the stores – as a large commercial entity, but this was not a transformationist perspective. Retailer 1 (2017) also indicated his interest in the community, but how this related to their producers was not really clear. Some farmers, when probed, discussed their labour force, with one farmer in particular expressing his concern about South African labourers being unemployable due to poor education and therefore a lack of skills. The farm workers, however, were not interviewed, and therefore their perspectives are not reflected here. From the literature, it is clear that South Africa has a dualistic agriculture sector and that ownership of land is still skewed. Agricultural workers are among the lowest paid (Greenberg, 2013). From these observations in the dataset one can thus see, beside animal welfare and human health, that these social issues highlighted by the literature did not form part of what determines free range in the Western Cape. It can therefore be concluded that for free range chicken to be considered a sustainable alternative, more development work is needed in the area of social equity.

In this case study economic system contemplations comprised free range as a commercial entity specifically speaking to the business opportunity and the cost of rearing free range chicken. In the literature the economic system contribution for a sector would also often be illustrated by describing the size of the sector in currency

value. Such illustrations would include the size of trade in the sector and the employment opportunities that it creates. Since SAPA and DAFF do not report on free range chicken production, it is difficult to describe the South African sector in similar terms. This case study only covered a sample of the contributors in the Western Cape and therefore cannot comment on the size of the sector either. What can be said, however, is that most farmers who participated in the study had small operations. It is possible to deduce then that collectively, they created only a few employment opportunities. The exception to this is Farmer 4 (2017) who controlled his entire supply chain and had seven contract growers.

According to the FAO (2014) the chicken industry's total global GHG emissions is eight percent of the livestock sector, or 606 million tonnes of CO_2 equivalent. The sustainability literature describes chicken as more environmentally efficient compared to other meats (Ellis & Kempsey, 2016). According to De Vries and De Boer (2010), the production of one kilogram of chicken meat has the lowest environmental impact as opposed to beef protein that has the highest. However, according to SAPA (2012), free range chicken requires more space and in some cases longer rearing times, implying an increased demand for feed and water, and thus a greater impact on the environment than conventionally produced chicken. Free range chicken is also transported, slaughtered and processed in the same manner as conventionally produced chicken, implying fossil fuel dependence (Marsden & Morsley, 2014; Leinonen *et al.*, 2013) and as much of an impact on the environment as conventionally produced chicken.

Earth system considerations were barely mentioned by the participants. Only one retailer indicated his involvement with the *Round Table for Sustainable Soy,* while two farmers and one chef indicated their concern for the health of soil. Farmer 5's (2017) regenerative farming system is particularly based on improving the environment with a core focus on healthy soil. He is also the only farmer who considered the impact of feed on the environment, advocating for GMO-free feed. These practices, according to him, were, however, not about free range, since the term 'free range chicken' does not imply such environmental consideration. For free range chicken production to be considered a more sustainable alternative there would have to be a greater focus on environmental factors throughout the production cycle, such

as feed, water, energy use as well as factors that lead to GHG emissions. It is interesting to note at this point that Regulator 1 (2017) pointed to "a fundamental disconnect" between good animal welfare and reduced environmental pressure: "the more intensive the agriculture, the less [the] environmental harm."

There is clearly much more research needed to establish whether or not free range chicken production is a more sustainable alternative than conventional production. This would need to start with a closer look at the environmental sustainability of this production system since, according to the nested view of sustainability (Griggs, 2013), the environmental impacts need to take priority as the Earth system supports the social and economic systems. Assessing the environmental impact of free range chicken would require understanding the use of resources such as feed, water and energy as well as the need for space and the impact of waste and outputs. Determining the social impact of free range production would require a closer look at livelihoods, employment equity and forms of ownership. And to establish the industry's economic contribution, one would need to start by gathering data on the activity and size of the sector. These reflections on the sustainability of free range chicken as an alternative production method have influenced the recommendations in the section that follows.

5.3.5. Future research recommendations

This research was exploratory in nature due to the limited research and literature available about free range chicken production in South Africa. As is the nature of exploratory research, it generated many new questions, and highlighted the specific topics requiring more research. The recommendations that follow thus focus on areas for further research, and are not listed in any hierarchy of importance.

More research and practitioner education is needed in the area of animal welfare, including a more comprehensive understanding of animal-specific needs and knowing what is good for chickens in particular. The findings of this study revealed that participants perceived the Five Freedoms as too broad and not addressing the fact that animal needs differ. The study findings also revealed that even those who allegedly value animal welfare were unclear on what practices would best ensure that their

chickens experienced a life worth living. The proposed research should thus consider what good animal welfare means for chickens, and would need to assess i) what chickens need, ii) how they behave and ii) what is good for them (for example, a need would be food, but what would be good for them is bugs). The proposed future research should also consider the process of preparing the animal for slaughter, such as the manner of catching birds, the travel distance or time limit and treatment of animals at the abattoir. Furthermore, it proved insightful to consider the aforementioned process in the light of varying weather conditions. This recommendation stems from Farmer 4's comment regarding bird packing densities that differed depending on whether his birds were being transported in winter or summer.

For free range to be environmentally sustainable the definitions, guidelines and potential future legislation need to consider resource use such as the type of feed and how the feed is produced including the distances that feed has to travel. As indicated by the literature, feed is one of the largest contributors to environmental degradation in chicken farming. The type of feed and the distance travelled both have an impact on the environment. More research is thus needed about the kinds of chicken feed on the market, specifically protein alternatives (soy is the most common), how each is produced and whether it is desirable and possible to produce them in closer proximity to chicken producers. Such research could include considerations for insect protein replacement, as suggested by Farmer 6 (2017), instead of using soy, known to cause environmental damage. Assuming free range production is more expensive, because it is less efficient (Regulator 1, 2017), it would also be interesting to know what a more (environmentally) efficient system would entail. I therefore recommend that more research be conducted on the requirements for making free range production more environmentally efficient, whilst practicing good animal welfare.

The importance of healthy meat came up in a lot of the discussions, with specific reference to the use of antibiotics and hormones in chicken feed. While participants were divided on the issue of hormone use, there was consensus on the issue of antibiotic use and its effects. I would therefore recommend regulation around the use of antibiotics to protect consumers. Such regulation could include requirements for specifying antibiotic use on the packaging of all types of meat products. The effects of

such antibiotic use on human health should also be specified just as it is done on cigarette and alcohol labels. The issue of antibiotic use could also be addressed in the general regulation of free range production, specifying the banning of antibiotic use and specifying withdrawal periods in the event that animals become sick (this recommendation is discussed in more detail further down).

It would be interesting to know what consumers know and what they want when it comes to choosing alternatively produced meat products. As seen in this case study, some participants claimed that consumers determined free range production practices. I therefore recommend that a similar study be done in the same bounded system to determine how consumers view free range chicken, including *what* and *who* they think determines free range chicken. This could also include an assessment of what consumers want when it comes to free range chicken, and what factors determine these wants. The findings and insights gleaned from such a study could then guide essential future consumer education, which in turn could put pressure on those providing free range chicken to produce and sell real free range chicken. Gaining effective consumer support (through consumer education) for a more sustainable alternative could transform an industry and have positive impacts on the social and environmental systems.

I find the tension between humanity's right to healthy, affordable food, the profitability of providing food and the intensive use of the environment to provide it, as very interesting. Chicken production became a commercial enterprise over time and today people (businesses) are capitalising on this norm. Since one of the strongest motivators for choosing certain practices is money, as seen in theme 4, good practices, such as producing free range chicken (assuming it proves to be good for the environment and society as well) need to be rewarded while poor practices need to be penalised. Research needs to be conducted on methods of taxing, fining and monitoring of poor farming practices. This form of regulation also calls for investigation into the premium rates consumers are charged for healthy or more sustainable options. If free range chicken production turns out to be more environmentally sustainable, it should not be more expensive. In fact, it should be cheaper since true cost accounting (Farmer 5, 2017) would reveal the true environmental and social cost of better farming practices.

The literature and the case study revealed that free range chicken production was a noteworthy sector, but more research is needed to determine the actual size of the sector, how much employment it creates and what the growth potential is. One would assume that this kind of data would be collected by DAFF or perhaps an organisation like SAPA. However, it is not. This lack inspired the following recommendations: SAPA should collect such data and report on it, since the organisation claims to represent the whole industry and therefore all forms of chicken production. Alternatively, the free range chicken production sector should work together and present a united front. If the various role players could look past their competitiveness, they could form an industry body that would be able to gather the type of data that is needed. Making such data available could garner more support for the sector as a whole.

This study showed that the lack of detailed laws regarding the practice of free range chicken production left the interpretation and practice of free range chicken production wide open – an outcome that was expected given my social constructivist leanings. The self-regulation practised by large retailers (paying consultants to audit their practices), in particular, needs to be addressed by regulation. I therefore recommend that a set of laws be developed to regulate production schemes, specifically free range chicken meat production. With regards to regulating production schemes, I want to emphasise that private certification that require farmers to pay would not be the correct method of regulation. There is already a list of costs that farmers need to consider, so requiring them to be certified and then asking them to pay for that certification will only aggravate the problem. Also, it is illogical to penalise producers whose methods prove to be better for the environment, animal welfare and human health.

The existence of laws on free range chicken production would make self-regulation by retailers unnecessary, but the issue of self-regulation versus legislation should be further investigated to see which of the two would be most effective in the South African context. The reason for such a recommendation stems from the tension observed between making a law and enforcing a law. Regulator 3 (2017) commented on this tension when he said, “the problem is not making law, the problem is who will

govern or monitor it." In light of the possibility that even a law could fail in its purpose, it would be worth assessing how reliable retailers' self-regulation is. If one assumes that their motivation is profit and that winning their consumers' trust through truthful communication (regarding production practices, for example) would lead to increased sales and increased profit, one could assume that thorough and ethical self-regulation would be to their advantage. It would therefore prove interesting to explore the value-practice nexus of retailers in order to ascertain if what they say is what they do, and if there is validity in the theory that speaking the truth impacts positively on making profit. However, I can already foresee challenges with being granted access to the necessary data.

Lastly, I think a clear understanding of all the factors pertaining to free range production as a sustainable alternative is required. The literature vaguely alludes to it as being more sustainable and the dataset reveals that it is merely more socially sustainable and in some instances more economically sustainable. I therefore recommend that a set of life cycle assessment studies be done in the South African context, assessing the environmental sustainability of free range chicken production. Similar assessments should also be done to establish the social and economic sustainability of free range chicken production. The social sustainability of this production method could be assessed by exploring the role of free range farm workers during production. Findings from case studies such as Solms-Delta[10] could help guide the proposed research on farm workers, particularly how they could benefit from more equitable farming systems. Based on the findings from such studies, one can

[10] Solms-Delta is a wine farm in Fransschoek in the Western Cape, in which the workers have a 33% stake. This was bought by Solms and Richard Astor, about 10 years ago, when they mortgaged their own farms to buy the Fransschoek farm. In December 2016 the government bought Solms-Delta, through their 50/50 policy, which is aimed at strengthening the relative rights of people working on the land. "It settled the R46 million bond on the farm, releasing Astor and Solms from their mortgages." This is the first deal of its kind. Before the government intervention, Solms-Delta had been celebrated as a farm that made great strides in social transformation, yet Solms admits that "it is really hard for new wineries to make it, especially so when your business is not merely aimed at making money but also bringing [about] social change."

then reframe what free range chicken is, if the intention is to offer it as a more sustainable alternative. Furthermore, dissecting and integrating the three systems – economic, social and environmental – would provide the necessary information and scope for assessing where innovation is possible.

5.4. Conclusion

This case study revealed my contention that 'free range chicken' is a socially constructed concept and that economic, social and environmental pressures, opportunities and limitations could determine the interpretation and use of the term, thus influencing how free range production is perceived, practised and communicated. The study further highlighted that the interests of participants in the free range sector determined how they viewed and therefore interpreted and justified free range production as a practice or approach. Participants' views were diverse; these views were both individually and collectively created. In other words, individually crafted views of free range chicken were influenced by their personal motivations and interests, and their understanding of the animal-human relationship. Collectively crafted views were influenced by what they perceived as being expected of them and what others in the market are doing. In a sense it is the lack of regulation in the sector that opened the door for such diverse, socially constructed views.

This final chapter discussed the study research findings of the exploratory case study together with the literature review presented in chapter 2 in order to achieve the research objective, which was to assess *who* and *what* determines whether broiler production is free range in the Western Cape. This research found that the answer to *who* determines free range chicken was 1) not law makers, but 2) those who hold economic or decision-making power and 3) those who want to make a difference. The answer to *what* determines free range chicken was a range of factors: 1) animal welfare practices or standards, 2) the demand for antibiotic- and hormone-free chicken meat, 3) the price and therefore the quality of meat, and 4) the commercial viability of the free range operation. The research also highlighted how diverse and sometimes conflicting participants' views were. In some cases, there were even

contradictions in individual participant's views – when their rhetoric about animal welfare did not match their practices.

The possibility of considering free range chicken production as a sustainable practice was also considered in this chapter. Although this was not set out as a research objective, I included it on the basis of being a sustainability scholar and because free range chicken is in some cases offered as a more sustainable alternative. My summation was that while there is some evidence of free range chicken production's impact on the social and economic systems (of the nested three-system model used to assess sustainability), very little is known about the environmental impacts of free range chicken production. Assessing this type of production's impact on the environment should be addressed as a priority, as the environment system (or Earth system) supports the functioning of both the social and economic systems.

This exploratory case study concluded with the following eight recommendations: 1) more research and practitioner education on animal welfare is needed; 2) more research on the environmental impact of rearing free range chicken, specifically if it is to be called a sustainable alternative, should be conducted; 3) there is a need for legislation on the use of antibiotics on the animal itself as well as in their feed; 4) a case study ought to be done to explore the views of consumers in the same bounded entity – the Western Cape – investigated in this study; 5) there is a need for regulating poor farming practices by means of fines or taxation; 6) there is a need for reporting on the free range sector; 7) research ought to be done to assess whether legislation or self-regulation is most effective in this sector, and on the basis of such a study's findings, the drafting of regulation against self-regulation of retailers should be considered; and 8) studies such as life cycle assessment studies to determine the environmental, social and economic sustainability of free range chicken production should be conducted.

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Appendices

Appendix A: Interview questions

A1: Farmers

1. Tell me how you got into this industry.
   1.1. What made you decide on free range chicken?
   1.2. And how long have you been doing this for?
2. What does free range mean for you? (No antibiotics or hormones are often discussed here, so it's not asked as a separate question again)
3. What are your views on animal welfare (if not addressed in previous question)?
   3.1. What is this based on?
4. Who is your free range for (if not addressed in previous question)?
   4.1. (If for retailers) What do retailers require? Have they visited your farm?
5. Do you think your business/ practice is sustainable?
6. What are the greatest challenges in free range chicken farming?
7. Tell me about the free range farming community?
8. Tell me about the people that work for you

A2: Chefs

1. Tell me how you got into this industry.
2. What made you decide to cook this way/ approach food this way (all chefs claimed to cook sustainable foods)
3. What does free range mean for you? How do you know this is what you are getting? (No antibiotics or hormones are often discussed here, so it's not asked as a separate question again)
   3.1. Have you visited the farms of your free range suppliers?
4. What are your views on animal welfare (if not addressed in previous question)?
5. Who is your free range for (if not addressed in previous question)?
   5.1. What is the food philosophy in your establishment based on (and who would determine that)?
6. How does this speak to sustainability?
7. What are the greatest challenges in free range chicken farming?
8. Tell me about the sustainable chef's community?

A3: Retailers

1. Why is free range important to your business? And since when have you decided to sell free range?
   1.1. Has the demand for free range changed over time?
2. What does free range mean for you?
   2.1. How do you know this is what you are getting?
   2.2. How do you secure suppliers and what are your specifications for suppliers?
   2.3. Could I see the production protocols that you are referring to?
3. What are your views on animal welfare (if not addressed in previous question)?
4. Who is your free range for (if not addressed in previous question)?
   4.1. And what are the opportunities associated with free range?
5. What values do your business ascribe to?
   5.1. How does this speak to sustainability?
6. What are the greatest challenges in providing free range chicken?

A4: Regulators

1. What is your role in the industry?
2. How does your organisation view free range?
3. How would you define free range chicken meat production?
4. What is your view on regulating the industry?
5. What are the typical hurdles or opportunities in the industry (if not already addressed)?
6. What do you think the future holds for the sector?

Appendix B: Themes and Categories

Theme 1: Free range means a bird that is reared with good animal welfare.

Theme description	What the theme is not	Category name	Code name	Prevalence[11]	Code description
Free range chicken production involves an animal husbandry practice, with a specific focus on the treatment of the animal. Therefore, how the birds are reared or how people speak about their expectations of how birds ought to be reared earmarks this theme.	This theme is not about testing welfare against any other external reference of animal welfare, such as laws or regulations, unless such laws or regulations were referenced as forming part of that specific practice.	**T1:C1: The living environment of the birds**	T1:C1:O1: Access to the outside, to a natural habitat	**(13) 46**	Free range is associated with the freedom to move or the time that the birds get to spend outside. 31 of these codes are observations that I captured (photos), and therefore the prevalence would appear skewed. The codes appear 13 times in the case study data.
			T1:C1:O2: Artificial (unnatural) built structure(s)	**(8) 66**	The structure or barn built for the birds to live in. This include access to natural light and appearance of some sort of temperature control in the structure or barn. 8 instances are reference made in the interview data, with 58 of these quotes as observations captured (photos).
			T1:C1:O3: Natural environment or 'structures'	**(2) 9**	The availability of trees or shading structures for protection from predator or the weather. 7 of these are observations captured (photos).
			T1:C1:O4: Healthy soil	**5**	The importance of healthy soil or soil health and what impact this has on rearing chickens.
			T1:C1:O5: Access to feed and water	**(3) 21**	The access of feed and water and the importance of access and how this is connected to behaviour of the birds. 18 of the quotes are observations captured (photos).

[11] Prevalence indicates the number of times the topic or descriptions appeared in the case study dataset. It therefore means the number of times it was coded.

Theme description	What the theme is not	Category name	Code name	Prevalence[11]	Code description
			T1:C1:O6: Hygiene management	**(6) 9**	Approaches to and the importance of hygiene management. Three of these are observations captured (photos)
			T1:C1:O7: Stocking densities	**(8) 24**	This speaks to how densely the birds are stocked/ reared. 20 are observations captured (photos)
		T1: C2: The treatment of the bird	T1:C2:O1: An animal that is stress free, a happy chicken	**7**	The stress levels of the animal, what makes it stress and what doesn't, including how you would measure stress.
			T1:C2:O2: An animal that is kept healthy	**7**	The health of the animal as it relates to the manner in which it is reared.
			T1:C2:O3: When the birds are treated with respect	**2**	A description of the attitude towards the treatment of the bird; treating them with respect.
			T1:C2:O4: When the birds can practice their natural behaviour	**(13) 58**	Descriptions about the birds being given the freedom to practice their natural behaviour - this allowance is ascribed as a treatment practice. 45 of these were observations captured (photos).
			T1:C2:O5: When good animal welfare standards are practiced	**14**	People are not always specific about what this is, but use the words “good animal welfare”; so this was captured as a code.
		T1:C3: The lifespan of the birds	T1:C3:O1: Size and age of slaughter of birds	**12**	This codes indicates the lifespan of the bird and how life span relates to the definition of free range.
		T1: C4: What the birds are given to eat and drink	T1:C4:O1: The feed that is given	**14**	These are the description of the actual feed and not the access to feed (as seen in the previous code).

Theme description	What the theme is not	Category name	Code name	Prevalence[11]	Code description
			T1:C4:O2: The issue of hormones and growth promoters	**13**	This is about the use of hormones of growth promoters in feed. Antibiotics is always mentioned and therefore included as part of the previous code, T1:C4:O1. The issue of hormones are divided and therefore captured separately.
			T1:C4:02 Water	**5**	These quotes in this code speak to the importance of water and not access to water, as seen in the previous code, T1:C1:O5.
		T1:C5: The manner in which birds are prepared and transported for slaughter	T1:C5:O1: Access to abattoirs	**10**	In this code the access to abattoirs is descried. There's also mention of the ethos of abattoirs (although what this entails are not always elaborated on, except by one farmer), which will determine whether the farmer will use them or not. One of these codes is an observation captured (1 photo).
			T1:C5:O2: The death rate	**(6) 8**	The indication of death rate and how that related to free range. This includes observations captured (2 photos) and a reference to downgrades during preparation for slaughter
			T1:C5:O3: The manner in which birds are caught for slaughter	**1**	One farmer is very specific about the manner in which the birds are caught and loaded to the crates before travelling for slaughter. This, for them is a practice of free range and good welfare.
			T1:C5:O4: Transport of farm animals	**9**	This spoke about the distance to the abattoirs and in some instances about the method of transport

Theme 2: Free range means quality meat

Theme description	What the theme is not	Category name	Code name	Prevalence	Code description
This is a topic about food, in this case chicken meat, so everyone speaks about the meat – that is, the bird after slaughter – for consumption purposes. While this theme is solely about the meat, how the chicken was reared will impact the quality of the meat (mostly referring to the chicken's diet and stress levels).	This theme is not about the farming practices of rearing free range chicken, that are addressed in theme 1. However, issues relating to farming practices are raised, such as antibiotics or hormones in the meat. This will be discussed in the context of the quality of the meat and not in the context of the health or quality of life for the bird. The price of quality meat will not be a discussion about the cost of running a free range business as this is included in the next theme.	**T2:C1: The quality of the meat (this is after death)**	T2:C1:O1: Animal protein is important in our diet	**2**	The value and importance of animal protein in the human diet. This includes a description by one participant of why animal protein is important.
			T2:C1:O2: Free range meat is healthier	**6**	Deliberations on whether free range meat is, or isn't healthier than conventionally produced meat.
			T2:C1:O3: The taste profile of free range chicken	**14**	This included all comments that refer to the taste of free range and whether it could argued to taste better than conventional or whether there is no difference at all.
			T2:C1:O4: Antibiotics use and abuse	**17**	These comments refer directly to impact of antibiotics use and abuse on the outcome of the meat product and how this affects (or doesn't affect) consumer health.
		T2:C2: The price of the meat	T2:C2:O1: Free range is more expensive	**15**	These are descriptions of free range as more expensive, especially referring to the price of the meat product, whilst alluding to the production costs.
			T2:C:2:O2: Free range is a niche business	**9**	This code is about participants specifically describing free range as a niche business and that it is a more expensive product (often therefore also then seen as a better quality product).

Theme 3: Free range means a profitable business

Theme description	What the theme is not	Category name	Code name	Prevalence	Code description
This theme talks about free range chicken production as being a commercial undertaking – everyone mentions in one way or another that it is a business or that is must make money or make commercial sense. The commercial viability determines how the chickens are reared and therefore how free range is defined.	This theme is not about the political, social or ecological aspects of free range. It is purely about the economic factors, and what the aforementioned aspects mean in an economic sense.	**T3:C1: It's a business opportunity**	T3:C1:O1: Business opportunity	**2**	The value and importance of animal protein in the human diet. This includes a description by one of why animal protein is an important part of humans' diets.
			T3:C1:O2: Sustainability as an economic indicator	**6**	This talks about the sustainability of a free range enterprise, with a specific focus on the economic sustainability, therefore commercial viability.
			T3:C1:O3: Business model and growth	**14**	The business model, business growth and even business success (farms, retail stores and restaurants) were described along with free range as a business opportunity.
		T3:C2: Cost of rearing chicken	T3:C2:O1: The money matters of rearing free range	**15**	These are descriptions of free range as more expensive, especially referring to the meat product, whilst including production costs.
			T3:C2:O2: It's expensive	**14**	Descriptions that price associated with free range, which was always seen as 'expensive'.
		T3:C3: Market pressures	T3:C3:O1: Transparency	**8**	Descriptions and views about the transparency of the industry.
			T3:C3:O2: Changing institutional perception is hard	**4**	Participants share how they have to work within organisations to effect changes and this is described as being difficult.
			T3:C3:O3:Treatment of suppliers	**3**	The views and experiences of how suppliers (farmers) are treated by retailers.

Theme description	What the theme is not	Category name	Code name	Prevalence	Code description
			T3:C3:O4: Socio-political economic challenges	**10**	Descriptions and views of socio-political challenges that effect chicken production.
			T3:C3:O5: Need to feed a growing population	**7**	Views on the role of free range in a growing population, including the affordability of free range for the greater population.
			T3:C3:O6: View of the commercial food industry	**12**	General views about the food industry – the industry within which free range sits.

Theme 4: Free range is determined by decision makers or by access to markets

Theme description	What the theme is not	Category name	Code name	Prevalence	Code description
This theme especially speaks about who will decide what free range chicken is in a trade relationship. Since it is not formally regulated by law (as revealed in the literature review), I found that access to a market will determine how free range is defined and therefore how it is practised.	This theme is about relationships and decision-making power. It is not about the legal regulation (or lack thereof), so it is not to document the critique of the laws or guidelines for free range and animal husbandry in general. It is not about the business of free range as discussed in theme 3. Instead it is about who determines where of how the business is conducted.	**T4:C1: Retailer requirements and strategies**	T4:C1:O1: Free range production protocols	**8**	The specifications by retailers, called production protocols, on how farmers should farm in order to be considered free range by their business.
			T4:C1:O2: Procurement policy	**4**	How retailers secured their free range farmers to supply to them.
		T4:C2: Farmer practices and strategies	T4:C2:O1: Farmer protocols or practice principles	**1**	These are descriptions of free range as more expensive, especially referring to the meat product, whilst including production costs.
			T4:C2:O2: Best practice research	**6**	Farmer's reference to the research or models they used which influenced the way that they farm.
			T4:C2:O3: Supply | sales strategy	**5**	A description of where or how farmers sold their produce.
		T4:C3: The head chef and restaurant profile	T4:C3:O1: Chef's food philosophy	**4**	A description of the chef's food philosophy and how this determines the restaurant's ethos and therefore the definition of free range.
			T4:C3:O2: Chef's values	**4**	References made to the chefs personal values and how these determined how they work and therefore how they relate to a product such as free range chicken meat.

Theme description	What the theme is not	Category name	Code name	Prevalence	Code description
			T4:C3:O3: Restaurant profile	**4**	The profile of the restaurant and how that enabled them to determined what they do and therefore what free range is.
		T4:C4: Perceived consumer requirements	T4:C4:O1: Consumer needs are important	**4**	The views and descriptions of the importance of consumer needs.
			T4:C4:O2: Consumers challenge free range statements	**4**	Examples provided of how consumers have challenged their statements on free range.
			T4:C4:O3: Lifestyle impacts consumer choices	**2**	Views on how consumer life style affect their food choices.
			T4:C4:O4: Consumer education	**10**	Views and opinions on the role of consumer education including the level of consumer education in South Africa.
		T4:C5: Activists' role in determining the system	T4:C4:O1: Activists influence on the sector	**4**	Special interest groups or activist that refer to how they have influenced the sector.
		T4:C6: Lack of community	T4:C6:O1:The free range community don't work together	**5**	Descriptions about the free range community; how the community operates, works together, and how they support each other.

Theme 5: Free range is coupled with concerns about the lack of regulation

Theme description	What the theme is not	Category name	Code name	Prevalence	Code description
There is an overwhelming concern expressed by almost all of the participants about the lack of regulation and what impact it has on the free range sector. These concerns are associated with the challenge of actually determining what free range is.	This theme will not analyse the current SAPA guidelines for free range chicken per se, but will share people's views on these guidelines: what works and what does not.	**T5:C1: Free range is not regulated**	T5:C1:O1: There is no legislation, regulation, accreditation, certification or standards	**20**	Participant discussions about the lack of regulation for free range in South Africa.
			T5:C1:O2: Free range terminology has been abused	**7**	Descriptions and view on how the term 'free range' has been abused.
			T5:C1:O3: There are too many views on the definition of free range	**16**	This speaks about the varied views; participants either say there are varied views or they acknowledge that they describe free range in their view, without being sure how others describe it.
		T5:C2: Free range audits	T5:C2:O1: Free range audits	**15**	The process that participants explain as the checks and balances to authenticate the free range claim; audits.
			T5:C2:O2: Have a contract	**2**	Legal arrangements with other growers.
		T5:C3: Regulators in an unregulated industry	T5:C1:O1: Regulator view of their role in the food system	**6**	How regulators – law makers, special interest groups, activists etc. – described their contribution in an unregulated space.
			T5:C3:O2: Regulator view on determining free range	**6**	Regulators comments on what determines free range and how that should be implemented or legislated.

Appendix C: Ethical Clearance

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Approval Notice
New Application

24-Apr-2017
Coetzee, Angela A

Proposal #: SU-HSD-004471

Title: **Exploring thriving free range chicken farming despite the lack of accreditation and imposed standards: A case of free range chicken farming in the Western Cape, South Africa**

Dear Ms Angela Coetzee,

Your **New Application** received on **06-Apr-2017**, was reviewed
Please note the following information about your approved research proposal:

Proposal Approval Period: **24-Apr-2017 -23-Apr-2020**

Please take note of the general Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

Please remember to use your **proposal number** (**SU-HSD-004471**) on any documents or correspondence with the REC concerning your research proposal.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Also note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary).

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) registration number REC-050411-032.

We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 218089183.

Included Documents:
DESC Report
REC: Humanities New Application

Sincerely,

Clarissa Graham
REC Coordinator
Research Ethics Committee: Human Research (Humanities)